Five columns started from the neighbourhood of Pretoria and were to advance due east, where they would be joined by three more advancing successively from the north, the whole converging and moving south-west would, it was hoped, eventually bring the forces face to face with the enemy in the bottom pocket of the Transvaal.

On 28th January the first five columns began the advance, driving east on a line 30 miles in length. The marches were about 15 miles a day, and were intentionally short, as a good deal of work had to be done on the road. It is a long story, but in brief all the commandos belonging to the places traversed passed through the meshes of the net. The only forces remaining before the driving line being those drawn from the extreme S.E. of the Transvaal, towards which the "drive" was taking place. These pushed along covering the retreat of their families and stock, now turned out on the veldt.

Very skilful management was required to secure the due co-operation of all the columns and their regular feeding. Smith-Dorrien, in command of one of the two columns passing from north to south was escorting an immense supply of food and stores. Before he could link up with the five columns going east he was attacked at night by Botha near *Lake Chrissie*. The horses and transport were parked in the centre of the camp, and hedged in by infantry battalions. At 3 a.m. on a pitch dark night a crushing magazine fire was suddenly opened on the sleeping square, which stampeded the horses of the 5th Lancers and Imperial Light Horse, thereby intensifying the confusion which naturally existed. These horses broke out through the square, and galloping towards the enemy were turned and driven back. In the confusion thus caused the enemy destroyed two of the pickets, but no further damage was done, and Botha shortly afterwards withdrew and escaped from the net. This attack cost Smith-Dorrien 300 horses killed or stampeded.

Steadily all the columns continued to converge on the S.E. corner of the Transvaal, and were now lined up from Swaziland to Natal, thus cutting off the S.E. pocket which ends at Zululand. Rear-guard affairs were frequent, and the columns struggled to get into position. The critical moment had now arrived, but the operations were delayed by weather and want of food. Supplies were coming from Natal, but the weather was dreadful, the roads impassable, the country most difficult for wheeled transport even under favourable conditions. The first part of the convoy, consisting of 160 waggons, left Newcastle on February 12th and reached Utrecht on 13th. The road from Utrecht to Luneberg is only 35 miles, but steep and there are at least three rivers to cross. It took two days to get the convoy nine miles up a long and steep ascent, and on 17th the rain fell. For six days and nights it rained without ceasing; every spruit became a raging torrent, and roads were axle-deep in mud, the waggons were bogged, and the troops lying in the open over a front of 80 miles were starving for the supplies so near and yet so far. Finally, supplies had to be sent across the river by wire rope, and this expedient, together with pontoons and rafts, had to be used on two or three other rivers, so as to lighten the waggons considerably for the wretched oxen to get them across. It was the 2nd March before supplies reached French: on the 7th the men were temporarily on full rations, but the horses got merely a microscopic allowance of corn and the mules nothing whatever for a fortnight later.

For two weeks the men had had no food but what could be obtained locally with great difficulty. On 6th March the rain again began, and it rained continuously for eight days. From the 16th Feb. to the 16th March the troops were immovable under the terrible climatic conditions mentioned, and in a state of semi-starvation. If this was the case with the men, that of the animals was worse. The deluge and the break down in the transport of the supplies doomed this sweep to failure. When the weather cleared it was again pushed on, but with very little success; the Commandos melted away. Botha was outside the ring fence, in fact was riding into the Free State to talk over with De Wet the results of his raid into the Colony, and was back again at Bethel while our troops were hemmed in by floods and tied down by starvation with their heads facing the other way.

The results of these operations were disappointing. They involved the loss of two and-a-half months in time, and from a military point of view may be regarded as practically barren. A large amount of stock was captured, according to the Official History* 272,000 head. The "Times History places it at "between 7000 and 8000 horses and mules, and a quantity of cattle which it would be profitless to reckon, since through sheer inability to keep or kill them the greater part escaped." †

Immense supplies were captured or destroyed, yet we have seen our force starved, showing the difficulty of carrying food on its feet, and the waste of food supplies which occurs in this class of warfare. The flour which is burned to-day because it cannot be carried may be worth its weight in gold in a day or two.

The loss of horses in this drive was estimated at 2000, ‡ but this can only refer to the dead loss. Casualty returns for one column (that of C. E. Knox) show that between 27th Jan. and 12th April the total loss of horses was 50% and the dead loss 20%. Only seven horses in this column were killed in action, 255 were destroyed, 64 died (all from horse-sickness), and 36 were missing or abandoned.

Assuming the above figures to apply to the other columns, the estimated total loss may be taken at 5000, and the dead loss at 2300. The latter figures

* Vol. IV., p. 122.

† Vol. V., p. 181.

‡ Cd. 963, p. 49, Cable 79.

then compare very well with the above official cable, which was despatched on 20th March before the operations were concluded, for on 26th March the columns were occupying a line 120 miles long, and from this further operations occurred which were not concluded until 13th April.

A return for Alderson's Column between 8th January and 22nd April gives the astonishing total loss of 80% (nearly), due to exhaustion, debility, sore backs, and horse sickness. The dead loss is unknown.

The losses from "horse-sickness" during this "drive" were very heavy, as the columns were operating at the worst season of the year. Starvation also played an important part, as may be seen from the following table of the daily amount of corn issued per horse:—

Jan. 26 to Feb. 10		10 lb. corn daily	
Feb. 11	,, 20	8 lb. ,,	
,, 21		3 lb. ,,	
,, 22	,, 28	nil	
Mar. 1	Mar. 12	8 lb. ,,	mules nil
,, 13	,, 20	nil	
,, 21	,, 25	10 lb. ,,	,, 5 lb.
,, 26	,, 30	7 lb. ,,	,, 3 lb.
,, 31 onward		10 lb. ,,	,, 5 lb.

The cause of this starvation was the breaking down of the transport referred to above, owing to the days and nights of continuous rain. The loss would have been far greater but for the fact that grazing was possible at a time when military operations were impossible. The continuous wet, together perhaps with the irritating effect of dirt caused a large number of shackle and other wounds to assume a very unhealthy condition, resembling in appearance and indolence the "veldt sores" which affected the men.

During this long drive across the Eastern Transvaal fresh measures had been adopted for the care of sick and debilitated horses; each column was directed to maintain a small permanent staff under the veterinary officer for this purpose. The animals were brought on quietly with the convoy in rear, grazing as they travelled, and the relatively short marches enabled this rough and ready system of mobile hospital to be rendered most useful. The cases were dressed on reaching camp. No transport was allowed for these hospitals. Even at this period of the war the essential factor for field hospital organisation was denied. The whole question of hospitals will, however, be considered in a separate section at the end of 1901.

ORANGE FREE STATE.

Operations February-June, 1901.

Elliott's "Drives."

The only column returning to the Free State in the chase after De Wet, the movements of which we have noticed, was that of Plumer (p. 156). The others followed, some crossing at Norvals Pont, others to the west at Orange River Bridge on the Kimberley line. Thus twelve columns came bustling back into the Free State. C. Knox, Crewe, Pilcher, and Bethune crossed at the Orange River Bridge and scoured the country in the direction of Bloemfontein. This was entered a fortnight later after meeting with constant opposition from small bands of the enemy, which, though not identified at the time, were the commando fragments shed by De Wet's main body as it proceeded north. Among those crossing in the east at Norvals Pont were Haig, who made for Hertzog in the direction of Luckhoff, but was then called to the line, arriving at Edenburg on 10th March. Hickman and Thorneycroft also crossed, and were at Springfontein on 9th March. Under the command of General Lyttleton a big "drive" up the eastern part of the Free State from the Orange River to the defended line running between Bloemfontein and Basutoland was now organised with the three eastern columns above mentioned, together with the three under Bruce Hamilton. On the 10th March it began to advance, hampered by tired animals and mud, and as it slowly rolled northwards Bethune and Pilcher were able to take part in the sweep which, excepting for stock, was nearly destitute of military results. It terminated on 20th March, 4300 horses were captured and enormous masses of stock. Bearing in mind the cockpit this area of the Free State had been for a whole year of the war, and the scores of columns belonging to both sides which had traversed it, it is astonishing to find so many horses among the captures, and indicates the extraordinary resources of the country which we were now only attempting to utilise. So great had been the drain on the Remount Department that it was found impossible to meet the ever growing demand except by utilising the animals of the country after the enemy had selected the best.

Another sweep was made by the three columns of Bruce Hamilton, together with that of Hickman, from the Basuto border towards Dewetsdorp and Wepener, and from there concentrated south, as Kritzinger, who was still roving about Cape Colony, was expected to cross the Orange and endeavour to get north. Sweeping columns were also working in the vicinity of Heilbron under E. C. I. Williams. Rundle's two mobile columns of Campbell and Harley, to which Pilcher was later joined, were sweeping around Ficksberg, Thabanchu and Vrede, while Paris, who had returned to Kimberly on 12th March, after the De Wet hunt, swept up to Boshof and returned with large quantities (9000 head) of stock.

It was now April, 1901, and the change from seasoned to unseasoned soldiers had been going on for many weeks. The importance of this change from a horse-wastage point of view is considerable, and in considering animal losses during 1901 it must not be lost sight of. The M.I. which we first saw at Rameh in February, 1900, had long been a fine body of soldiers, the back-bone of many a column, but the toll of a thirteen months campaign is heavy, and drafts from these regiments amount-

ing to 2000 men had now arrived in the country with very limited experience. Some of these received their first insight into war by assisting in the chase after De Wet (p. 154), but all needed time for development.

In March Major-General E. L. Elliot arrived from India for the purpose of assuming Command of a Division 6000 strong, composed of the columns of Broadwood, De Lisle, and Bethune *, which was concentrating at Kroonstad. Owing to the fact that his ranks were filled with inexperienced soldiers, and his horses either remounts or just off board-ship, Elliot wisely determined to make his first drive educational. He selected the west of the line between Kroonstad and the Vaal, and on 10th April marched north towards the latter in easy stages, and turning east converged at Vredefort Road on 20th. The opposition had been slight, but De Wet, who was on his way south to Petrusberg, could not resist the temptation of capturing a patrol. In this sweep Elliot obtained 35,000 head of stock, 184,000 lbs. of grain, and many waggons. E. C. I. Williams, who was independently working the Vaal between Heilbron and Frankfort, brought in 14,500 head of stock, and had destroyed tons of flour and the mills which had ground it. † This destruction of food stuff appears strange in the face of the feeding difficulties the troops experienced, but the material could not be transported.

Elliot's second "drive" was now projected, the principal of which was that his three columns should move on a broad front of 40 miles, the flanks of which would touch Heilbron and Lindley. Into this driving line as it advanced the enemy was to be forced by other columns operating from the north and south. A wheel to his left would then bring his columns facing the Vaal on which he was to advance, and into his arms the scattered bands were to be driven by columns operating from the Transvaal (Heidelburg and Standerton). This was not all, having reached the Vaal the force was to move south-east and sweep the country bordering on the Klip River as far as the north point of Natal.

The operations began on April 24th, and by the 28th Reitz had been touched in the wheel north from Lindley. On 30th Frankfort was reached, and on 4th May the Vaal. On 7th the force moved south-east to Vrede, and at De Lange's Drift over the Klip River contact was made with Colville from Standerton to whom the spoils of the drive were handed, amounting among other things to 70,000 head of stock and many waggons, 9000 head of stock had previously been sent back to the line *viâ* Heilbron. A four days sweep along the Klip brought the force on 19th May to Botha's Pass in northern Natal, where 2200 captured horses, 600 oxen, and 16,000 sheep were despatched to Newcastle. Twenty-five miles west of Botha's Pass Elliot discovered a place not figured on the maps, an isolated horseshoe-shaped series of hills ten miles in length and of fantastic shape, "crags so sheer, and so squarely hewn by nature, that the hills appeared to be crenelated by a parapet of Norman castles.*" This place was a magazine and remount depot for the Free State forces. It was raided by Elliot, who captured 1700 horses which he sent into Harrismith by De Lisle.

Elliot on 3rd June was directed to return to Kroonstad *viâ* Reitz and Lindley; on 6th June a laager of the enemy was raided, and a large convoy captured by a small party of the 6th M.I. and South Australians belonging to De Lisle. This force in turn was set upon by a superior body of the enemy, which compelled the party to seek shelter in a kraal and leave the captured waggons. Fighting was carried on by picked shots at 50 yards range and resulted in heavy loss on both sides. The horses were partly covered by the walls of the enclosure, nevertheless 100 were killed and 50 wounded. †

Elliot's Division reached Kroonstad in June after a march of not less 800 miles, and the following were the casualties during the seven weeks covered by the operations :—

Died and destroyed	-	567
Killed in action	- -	177
Stampeded or captured by enemy		51
Sent to hospital during the march		216
Sick on arrival at Kroonstad		1430 of which 631 were surgical cases, principally lameness.

Taking the strength of the Division on leaving Kroonstad to be 6000, the total wastage amounts to 40 per cent., the dead loss to 13¼ per cent.

The total number of mules employed with the Division was 2252, of which only 36 died or were destroyed. Of 1600 oxen only 36 died. These figures for the transport are very good, and due to the short marches made and the care taken that the animals were invariably outspanned, watered and rested at mid-day.

The food allowance for horses was 10 lb. grain and 6 lb. for mules, in both cases a mixture of maize and oats. The enemy started veldt fires around the column, always so arranging that the fire was driven towards it. Under the cover of this attacks were frequent, but the most serious result was the loss of grazing to the animals; fortunately the worst trouble in this respect was towards the end of the march.

* The following Veterinary Officers were with General Elliott:—Major Mann, S.V.O., Capt. Boase, Cape Colony Forces, Lieut. Lockwood, I.Y., Lieut. Anderson, I.Y., C.V.S. Parker, Crawford and Farrell.

† "Official History," Vol. iv., p. 101.

* "Official History," Vol. iv., p. 104

† Curiously enough, both De la Rey and De Wet were in this attack, the former had come on an official visit to meet President Steyn. The redoubtable trio were disturbed at breakfast by a messenger, who informed them of the captured convoy and laager. Accordingly they went to its rescue, and but for the appearance of De Lisle, four hours after the fight began, there is no doubt what the result would have been.

The total amount of stock collected by this Division was immense, amounting to 131,500 head;* of these 15,000 were horses. One thousand of the captured horses were utilised during the march to replace casualties, but they were very unfit, and after being ridden four or five days were returned to the "mob" which was being driven along with the columns. On an average 20% of the captured horses were suitable for the ranks after training, and 40% were such as might be utilised by the enemy for a few days. The remainder were foals, yearlings, or mares too heavy in foal to be able to gallop. These figures are of interest in considering the proportion of horses in Cape Colony which might have been utilised as remounts. The estimate was made by Major Mann, A.V.D., S.V.O., of General Elliot's Division after weeks of observation.

The chief sickness met with during the march was biliary fever: the most usual cause of death was exhaustion. The surgical cases were principally lameness, sore backs and heel galls. No less than 111 cases of sore back and heel gall were sent to Standerton by Colville from the 1st and 3rd Dragoon Guards and Broadwood's Yeomanry. The chief cause of lameness was laminitis; the horses could not be kept shod, in fact, there was not a shoeing smith in the whole of De Lisle's M.I.

The Division had a veterinary hospital, which was fixed at some convenient point, generally Heilbron, for the reception of cases. It moved between Heilbron and Kroonstad, but it was found that it would have been of more use had it accompanied the Division.

Other operations occurring in the Free State may now be noticed. Rundle's two mobile columns had for some time past been holding positions as garrison troops; one of these, Campbell's, was finally available for raids, and on 20th April Rundle with this column moved out of Harrismith for Bethlehem (50 miles). It is characteristic of the state of the country at this time that, to reach Bethlehem, cost him four days incessant skirmishing.† On 29th, Rundle entered the Brandwater basin, reaching Fouriesburg on 2nd May, where for a month he operated from this point. He left the basin on 4th June with 6000 head of stock. His 500 new Yeomanry, "some of whom had scarcely learned to ride, were found impotent in the wild ravines of the Wittebergen."‡

Between 22nd April and 8th May Pilcher and Thorneycroft raided the Winburg, Senekal and Doornberg area. From the 13th to 22nd May both of these columns worked in the direction of Bothaville, Commando Drift and the Vaal, having numerous encounters, and returning to the line with 5000 head of stock.

The six columns guarding the Orange River under Lyttelton in March had little to do, though there were several sharp encounters with local bands, including a 40-mile march by Monro with a large haul of prisoners. The Trans-Caledon region was now ordered to be cleared; this was the recruiting ground of Kritzinger, who, in spite of the numerous columns along the river was actually, though unknown to his enemy, obtaining horses in the Free State in May. He experienced no more difficulty in returning to Cape Colony than he had in leaving it. The first sweep of the Caledon district produced 97,000 head of stock. The general trend of the columns was now in the direction of Cape Colony; Munro, Haig, White and Hickman had all gone thither before the end of May. In the same month W. H. Williams had swept along the north bank of the Orange River to Orange River Station, and was surprised to find the country still full of stock. He returned with nearly 100,000 cattle and sheep.

Bruce Hamilton's information lead him to organize a sweeping movement from south to north of this part of the Free State between the Orange and Modder Rivers. Seven columns were made out of his original three, and with the co-operation of C. Knox a drive was organised against a barrier of posts held by the Constabulary, and thrown out across the Free State. But though it employed eleven columns it lead to no important results. The whole of the Free State between the Vaal and Orange Rivers, and west of Bloemfontein was now for the remainder of the month continuously raided by six columns. Simultaneously to the east of the railway, *i.e.*, in the Reddersburg-Dewetsdorp area, three columns ravaged the country, and though large quantities of stock resulted from these raids no conclusive military results were obtained.

On 22nd June, Elliot started off from Kroonstad on another drive, this time with four mounted Brigades, Bethune's, De Lisle's, Broadwood's and Lowe's, a total of 5670 horses, 2826 mules, and 1840 oxen. He swept the country between Lindley and Senekal, the objective being Springfield Drift near Harrismith. This was reached on 2nd July, and was effected by forced night marches and night raids, but all were fruitless for the enemy had full warning, moreover, they were most exhausing to animals; Elliot captured 3000 horses and 3000 cattle. This march to Springfield was more exhausting than those previously carried out, for water was scarce and the veldt burned. From Springfield the Division, in co-operation with Rundle's three columns, swept north over a frontage of 50 miles, taking in Reitz. At this place Broadwood contrived a surprise for a Commando, but found he had captured all the Free State Government with the exception of President Steyn, who escaped under remarkable circumstances.* Elliot returned to Vredefort Road *via* Heilbron, which he reached on 13th July.

* Six thousand sheep were destroyed for footsoreness, or for inability to cross the drifts.

† "Official History," Vol. iv., p. 15.

‡ "Times History," Vol. v., p. 241.

* The President was only 80 yards away from a man who was an expert shot, but whose rifle refused to work through the oil being frozen in the breach! The horses had already done 30 miles, so he could not be galloped down.

The casualties from the 22nd June to 13th July were 4 % dead loss and 10 % total loss.

It was during the March from Springfield to Heilbron that the new order was carried out of destroying all captured animals not of use to the force. Such work cannot be satisfactorily done while troops are marching daily, for time does not admit of the needful careful draughting, it therefore becomes very wasteful. Elliot brought back 4000 horses, 3,600 cattle, and 54,000 sheep.

Rundle, leaving Elliot, continued his movement to the north, sweeping up immense supplies and stock, 10,000 horses, 6,000 cattle, and 46,000 sheep. We have seen that Elliot had only a few weeks previously passed over part of this ground, yet Rundle's movement resulted in the above captures. Column after column had yet to move about and through this country before it could be declared swept. Having reached the Vaal south of Standerton Rundle returned to Harrismith, arriving on 3rd August.

Rimington now entered the Orange Free State from the South-Eastern Transvaal, where he had been employed together with Plumer in the Wakkerstroom clearance. He, like Benson, had adopted the method of night-raiding and day-resting. By this means he rested and fed his horses, and the result was to render him the most mobile and dangerous adversary which the enemy in the Free State could meet. From the middle of July to the end of August he was in the Heilbron-Kroonstad area, constantly engaged in clearing—that is to say destroying or removing supplies, stock, agricultural produce, and implements—and fighting. He imitated the "doubling back" methods adopted by the enemy; he travelled immense distances, 60 miles in a night, and rarely without some profitable results.

All this was due to his skill as a horse-master, of which he probably had few equals and no superior in the field. None knew better than he the value of food, rest and condition, and the necessity for the constant supervision of the master's eye. The veterinary officer with him was C.V.S. (now Capt. Head, A.V.C. Reserve, and we are fortunate in having from the pen of that officer * an account of the changes which were brought about in the horses of the Inniskilling Dragoons when Rimington assumed command in January, 1901. Under this commander the neglect of horses became a crime, and men who through carelessness laid their horses up marched on foot, and on arriving in camp were placed on picket duty. His great object was to interest them in the care of their horses, and to be proud of their animal's fitness and condition.

All this required time to effect, but with Rimington progress was steady. We now meet him in the following August an efficient fighting machine, with horses capable of real hard work, to gain which all non-essentials were sacrificed. Neither comfort nor appearances were studied, and not an ounce of unnecessary weight was carried on the saddle. He did not destroy supplies if he could carry or eat them; he never passed a water supply without watering his horses; nothing excepting military pressure would induce him to pass a place where grazing could be had. His horses came first in everything; his men, as he himself said, were capable of looking after themselves. * Rimington did not learn horse-mastership in the Field; like Benson and De Lisle he brought the knowledge with him. It was untinctured by the Epsom salts, diuretic ball and tonic powder management so common in the Artillery, where fatness and fitness are frequently confused. † He knew what horses could yield under generous care and treatment, and he stands out not as a solitary, but as one of the highest examples of horse-mastership in the war.

* "The Wear and Tear of Horses during the South African War," Lieut. A. S. Head, A.V.D., *Journal of Comparative Pathology and Therapeutics*, 1903.

* *R.C. Evid.*, Vol. ii., *Q.* 12,672.

The evidence of this officer before the Royal Commission, Vol. ii., p. 26, is a liberal education.

Q. 12,663. And you think the question of horse management is one of the first things in a campaign?—*A.* Absolutely the first thing—it is 75 per cent. of the campaign as far as I can see.

Q. 12,664. I see you used rather drastic measures with the men who did not treat their horses well?—*A.* Yes, we made their lives a burden to them.

* * * * *

Q. 12,668. You do not mean that there should be any disregard of the health of the men?—*A.* I disregard the men's health completely compared with the horses. A man can speak up for himself, and will no doubt do so and go to the doctor, but the horse cannot say anything.

Q. 12,671. I do not quite understand what is meant by this statement which appears in your précis "With all mounted troops extreme severity and absolute disregard for the men's health, feelings, or safety is necessary in this respect?"—*A.* Yes, the horse is the first thing absolutely. You must look after that . . . . .

Q. 12,672. . . . . —*A.* I look after the horse first—the man looks after himself.

Q. 12,673. But the horse would not be of use without the man?—*A.* We found that there were plenty of men; we never were short of men, we always were short of horses.

Q. 12,674. Still the life of a man has to be thought of?—*A.* What is the life of a man? A man's life is nothing in war. You do not care whether men are killed or not as long as you attain your object.

Q. 12,676. . . . . —*A.* I put the horse first. As long as I have plenty of horses I can manage. I do not mind about the men.

† Reference has been made at p. 117 to the organization of the Artillery. As horsemasters they have no superiors, devotion to the welfare of their animals is part of their service creed. Unfortunately they love drugs and nostrums, and attribute to these, results which are really the outcome of their own admirable care and supervision. Their weak spot is their love of a fat horse.

TRANSVAAL.

Western Transvaal, February-May, 1901.

The events immediately prior to those now to be recorded have been noted at p. 156. It was all important to keep the Western Transvaal quiet while French's big drive in the Eastern portion was taking place. There was no great activity on the part of De la Rey for the reason that he was short of horses, and had eventually to purchase in the Free State.* He was now to the west of the Magaliesberg in an impossible country for British columns. Babington was lying in an entrenched camp a few miles south of Olifant's Nek, and a force was at Roodepoort near Krugersdorp which had recently been repulsed by Smuts in the Gatsrand. Two new columns were formed to dislodge the latter, Shekleton with 1200 men of the M.I. just arrived in the country, and Benson with a very mixed column of odds and ends, comprising 580 mounted men, infantry and guns. Smuts escaped after the columns had been marching for a week, and in the early days of March Kemp also disappeared to join De la Rey in the west, stealing past Babington in the night. Meanwhile, Methuen in the far west at Taungs was moving east on Klerksdorp, and was intercepted by De la Rey at *Hartebeestfontein*, close to Klerksdorp, and had to fight his way in. His march was 150 miles. He then turned south to cross the Vaal into the Free State for the relief of the garrison of Hoopstad, but was unable to cross the river owing to floods, and had to work along the bank to Fourteen Streams, which he reached on 14th March. After relieving Hoopstad he spent all April getting his force in order, for he had now lost all his old Colonial troops; his Yeomanry also were leaving and being replaced by the second contingent.

During Methuen's journey along the Vaal to Fourteen Streams, *Lichtenburg* was attacked and invested by De la Rey on 6th March; it made a gallant defence. Among the garrison were 100 Yeomanry. Their horses were saved from destruction during the investment by being placed in the Dutch Church. Babington and Shekleton were sent to the assistance of Lichtenburg, and leaving Ventersdorp on 15th March took the wrong direction; while they were going west the enemy opened out, allowed them to pass by and then went south. Fortunately the error was discovered. The columns were attacked by De la Rey at *Geduld* on 22nd March, where the enemy again put into practice their new manœuvring of charging and firing from the saddle. The two columns closed in, and De la Rey retreated hampered by his transport. He was pursued, and again the next day until the horses could go no further, but the results, especially at *Wildfontein* on 24th March, in captures were excellent, and both columns returned to Ventersdorp. A shuffling of Column Commanders now occurred in April; Shekleton being replaced by Rawlinson, and Benson passing to the Eastern Transvaal for the Northern operations. De la Rey dispersed his forces. Babington and Rawlinson, after a good deal of marching in wet weather, surprised Smut's laager on 14th April at *Braakpan*, 25 miles north-west of Klerksdorp, and again made good captures. In spite of these successes the enemy hung about in the triangle formed by Ventersdorp, Lichtenburg and Klerksdorp. Meanwhile Methuen was railed to Mafeking and marched to Lichtenburg, where he arrived on 3rd May; five columns operating from the east worked towards him, but everything appears to have gone wrong, and the operation was nearly barren of results.

* "Times History," Vol. v., p. 218.

Strength of Columns.

Lieut.-Col. Benson	360	horses
,, Sir H. Rawlinson (late Shekleton)	1500	,,
Brig.-Gen. Dixon (late Cunningham)	1050	,,
Major-Gen. Babington	860	,,
Lieut.-Gen. Lord Methuen	1290	,,

With the exception of the force under Methuen and the chase on 23rd and 24th March there were no long marches performed by these horses, but the work, though interrupted for two or three weeks at a time, was very trying, especially as the change from old to new Colonials and Yeomanry Contingents was occurring. Dixon, for example, received several hundreds of men during April, and had, like Methuen, to devote that month to their training.

During the operations narrated horse sickness was very prevalent among the columns, the district in which they were moving being notoriously infective. Mr. F. B. Gresham, of Newark, who was C.V.S., with Shekleton's, and afterwards, Rawlinson's columns, tells me that during March Shekleton's column lost 32 animals from this disease. He has also been good enough to give me the general return of sick for that month, which is here produced as evidence of this class of wear and tear.

Shekleton's Column.

Strength in horses	1499	Remounts received during the month	534
,, mules	470		
Deaths	60		
Destruction	100		
Abandoned	4		
Loss by captures	15		
	179		

The monthly dead loss was 9 %, of which only a trifle (four animals) occurred in action. In addition there was at the end of the month a sick list of about 140 animals, made up principally of sore backs (87 cases), lameness from contusions (25 cases), and exhaustion (28 cases).

Mr. Gresham has been able to furnish me with three months' wear and tear in the 2nd Regiment of M.I. which belonged to this column.

		Original strength	Died and destroyed	Missing
Feb. 1 to Mar. 8		355 horses	32	5
Mar. 9	May 3	465 ,,	75	1
May 4	May 31	489 ,,	49	1

In three months this regiment suffered a dead loss of 160 horses, or nearly 11½% a month, this is quite exclusive of the temporary loss due to sickness. Horse sickness and inexperience of horse management were responsible for nearly all these losses.

We are now in the middle of May. Everything pointed to a southerly movement of De la Rey, and three columns converged on Wolmanstaad. The intelligence was defective in the sense that no concentration of Republican forces was occurring, though De la Rey had gone south in order to cross into the Free State and meet Steyn and De Wet, p. 159. He left behind him General Kemp, who was situated close to Dixon's camp at Naauwpoort (a few miles south of Olifant's Nek). Kemp took advantage, while Dixon was out clearing farms, to attack him at *Vlakfontein* on 29th May. The attack was made under the shelter of a veldt fire. "Out of the very flames there suddenly burst a torrent of 500 Boers, some firing from horseback, others leading their ponies and firing as they ran.*" Dixon's mounted men were mainly recruits; before this advance they gave way, but after desperate fighting and heavy losses among the troops the position and guns were saved by the infantry. The loss of horses is unknown: all the artillery animals were killed, and this prevented the enemy removing the captured guns.† Five columns rushed to avenge this attack, but Kemp's forces dissolved. The veterinary officer present at Vlakfontein was C.V.S. R. G. Anderson (now Captain A.V.C., T.F.), who was attached to the Scottish Horse. By vigorous measures he was able to save a stampede of the transport, which, parked a short distance from the scene of attack, was suddenly seized with panic and bolted when the shells dropped amongst it.

CAPE COLONY.

Operations, March-May, 1901.

The expulsion of De Wet from Cape Colony still left Kritzinger to be dealt with. He had been followed as far as the Sneeuw Mountains, which lie midway between Middleburg and Graaf Reinet, but the chase after De Wet had withdrawn all but two of the columns following him (see p. 154), those of Gorringe and Herbert, and these held on to his tortuous course. This was devoid of any special objective excepting that of travelling in the line of least resistance, and doing what damage he could to the railway. He was back in the Sneeuw Mountains on 25th February, rode north and disappeared. On 5th March he was found by Gorringe to have travelled south, and was located at Pearston, north-west of Somerset East, towards which he was driven, De Lisle being railed to cut him off. It failed, for Kritzinger crossed the line, and going north through Adelaide got into the Winter Berg Mountains which he traversed, and pointing in the direction of Burghersdorp crossed the Bamboes Mountains, passed over another line of railway, just west of Stormberg Junction, threatened Burghersdorp, destroyed a British post, captured a supply train, and was at Knaapdar a few miles south of Bethulie on the Orange River at the end of March. During the latter part of this chase the columns of Henniker, Codrington and Crabbe joined in. At Knaapdar he was lost; for 250 miles he had been followed, during which time two mountain ranges had been crossed. It was not until 11th April he was heard of again, when he was found south of Middleburg, where he had united with Fouché, and was chased by Crewe * who had come from C. Knox. Kritzinger, followed by Crewe, went north, crossed the Orange River, and got into the Free State.† Meanwhile, Scheepers had been leading Grenfell and Parsons an equally fruitless chase in the district lying between Aberdeen and Willowmore.

Scheepers, with whom at this time was Fouché, was chased by Parsons, Scobell and Colenbrander through the districts of Aberdeen, Graaf Reinet, Jansenville, and Somerset East. On 6th there was a fight at Aberdeen with Parsons, on 15th one with Scobell, who, by a 45-mile march prevented the enemy from attacking Jansenville. Malan now joined Scheepers and Fouché, and Scobell attacked and broke up the Commandos on 20th March, causing them heavy loss. Scheepers and Malan hurried to the Camdeboo Mountains, west of Graaf Reinet, followed by Scobell; Fouché made for Pearston followed by Warden, from whom he escaped and joined Kritzinger south of Middleburg, as related above. Scheepers and Malan were not again heard of until the end of April, when they were found in the vicinity of Pearston and driven north by Scobell and Henniker. Lukin, who came out of Cradock, attacked them on the flank, but they doubled back, were chased by Henneker and separated, Malan going north by Cradock, Scheepers making south for Somerset. The latter on his way was attacked by Henneker who had come back by rail, and after being roughly handled escaped in a snowstorm on 12th May, and made for the Camdeboo. Malan meanwhile was chased by Scobell to the west of Cradock; there was a fight on 2nd of May and another on 20th, Malan being driven north in the direction of Maraisburg; here he was saved by meeting the returning Kritzinger, who had re-crossed the Orange River and was making south.

Kritzinger's return across the Orange River on 17th May, with re-inforcements and remounts, was effected in the face of six columns on the south bank and three on the north. He was joined by Fouché who was awaiting him in the Jamestown district. The latter had slipped past Gorringe and

* "Times History," Vol. v., p. 282.

† The last man left uninjured at the guns was the Farrier-Sergeant of the Battery.

* Gorringe was refitting. Codrington's column was broken up.

† It can hardly be said he was driven across the Orange River. His visit was voluntary, and connected with recruits and remounts.

Crewe, who now endeavoured to prevent their junction. The two Commandos left the Zuur Berg Mountains, north of Stainsburg, from here they crossed the line south in spite of the 1500 men sent to block them; they then picked up Malan, and the three Commandos marched south. Kritzinger did not get far; marching rapidly Gorringe got to the west of him and Scobell to the east, and he turned east to the Bamboes Mountains.

Since the middle of April Haig had been in charge of the operations in the midland district, it was he who was now chasing Kritzinger with all the columns which could be spared. In the Bamboes Berg Kritzinger was pressed and harassed to such an extent that, leaving Malan behind, he broke away east over the railway in the direction of Jamestown, it was now 29th May. Scobell, strengthened by Lukin, and the 9th Lancers sent by rail from the Free State, closed the eastern outlet from Jamestown; Gorringe, together with a column under Murray from the Orange River near Aliwal, spread out around the north; Crabbe, Wyndham, and Monro (also from the Free State) closed in the west. It was the biggest combination of columns since the De Wet chase of the previous February. Eight columns containing 4600 horses formed one large circle around the invader. He charged through, and on 2nd of June raided and captured Jamestown, where he replenished ammunition, supplies, and obtained remounts. Pursued by Scobell and Gorringe to the north-east, he was surprised and severely handled by Scobell on 6th of June, and escaped on foot; on 7th June Gorringe, together with a column from Aliwal under White (648 horses) attacked him, but he again escaped. Malan, whom he had left behind in the Bamboes Berg, also escaped, but Wyndham, now close to Steynberg, captured some prisoners.

An attempt has been made above to give some notion of the severity of these operations on horses and the numbers employed. A hundred miles of marching are very soon covered in this class of work, even when the actual area of operations, as in the last recorded, is relatively small. Kritzinger's circular course from the Orange River to where he disappeared was not much more than a hundred miles, but that does not represent the distance travelled by the columns which chased him throughout.

The political, as apart from the military, importance of all operations in Cape Colony was enormous, and out of all proportion to the material damage a few wandering bands might inflict. To realise this, it may be mentioned that in Cape Colony alone there were at this time no less than nearly 50,000 troops, regular and irregular, under arms for the repulsion of two or three determined men with a following only numbering hundreds. That being so, it can readily be understood that the capture of these bands could only be effected by the mounted columns; the sparing of horses could meet with no consideration. Night and day, in all weathers, mounted columns travelled over stoney karoo, up the rugged precipitous sides of mountain 4000 to 5000 feet above sea level, then hustled into the train, bundled out in a few hours, or perhaps two or three days later, saddled up, and once more marching in search of their elusive enemy who probably by now was miles away in an opposite direction.

It is impossible to present any connected account of these operations in Cape Colony, which for eighteen months harassed both the military and political authorities. The "Official History," in referring to this fact, describes the operations as kaleidoscopic. Commandos would combine and threaten, dissolve and scatter to various points of the compass to then unite elsewhere. They had no objective excepting that of making themselves unpleasant, so that military instinct could not divine their next move; there was no scheme, especially at this time, in the Midland district. Later, when a Transvaal General invaded the Colony, Cape Town was the objective, but Kritzinger, Fouché, Scheepers and Malan were satisfied to roam through districts in the heart of the Colony, and in the centre of disloyalty, and succeeded in keeping more than an Army Corps under arms with enormous waste of horses. How that wastage was brought about the above brief account has attempted to explain.

CAPE COLONY.

Operations in the North-West, April-October, 1901.

In April, a column under Jeudwine, 500 strong, had left De Aar for the north-west of the Colony, the old focus of infection, p. 61. On 12th May it was at Brandvlei. In June it had reached Kat Kop, 230 miles due west of De Aar, having patrolled the intervening districts which were in a condition of smouldering rebellion, shadowed the whole way by a force of the enemy under Commandant Conroy. Definite shape was being given to the disloyalty of this distant north-west by one of Scheeper's lieutenants, by name Maritz, a man of remarkable ability and genius for organisation. At present Maritz avoided Jeudwine as he was not ready, but he marched about the country travelling immense distances. His movements gave Jeudwine some severe marching in this outlying district of Calvinia, over mountains and dreary sandy wastes which proved most exhausting to his transport. On 8th June Jeudwine made a forced march of 54 miles in 24 hours against Maritz who disappeared, and after further marching he was obliged to go to Calvinia to rest and refit. In two days he was out again to relieve a post 48 miles west of Calvinia, marching all night through heavy rain he covered the distance in 24 hours and relieved the place. Hearing Maritz was still to the west of him he followed and got in touch on 25th June, but Maritz marched away taking his Burghers on a 200-mile ride; Jeudwine followed him for days, Maritz travelling from time to time in opposite directions in order to mystify his pursuer.

Jeudwine followed him up to 8th July, on which date he made the almost incredible march of 68 miles, when he handed over the column to Capper. Jeudwine's marches were attended with but little fighting and have not been sufficiently recognised. In 54 days he had marched 1150 miles, an average of over 21 miles a day, "in the face of incredible difficulties of supply, transport and conditions of road." *

During July Maritz remained in the inaccessible regions of Sutherland. Capper could barely obtain a sight of his bands, which hovered over precipices and heights inaccessible to guns and transport. The position of Maritz at Sutherland, close to the railway and near to Cape Town, was part of a programme. He was waiting for Smuts from the Transvaal. In August he disappeared on one of his long marches, and was next heard of at Van Ryn's Dorp, 40 miles north of Clanwilliam, which he captured on 7th and replenished his stores, ammunition and horses. Capper followed him thither but was late; he then went to Calvinia, and hearing Maritz was in his old haunt at Brandvlei, west of the Zak River, 80 miles north of Calvinia, he adopted the night marching and day resting tactics, found so useful elsewhere, and surrounded the laager, but the enemy galloped through. Capper now did over a 200-mile march to Ceres on the Cape Town railway (65 miles north-east of Cape Town), where he arrived on 15th September; until the 15th October his force was employed barring the entrance to the capital against the inroad of Maritz. This leader had largely recruited, and was virtual ruler over the north-western districts; he was now ready to carry out his part of the invasion programme with Smuts, which constituted the entry into Cape Town, but these events will be separately considered. We have been compelled in the interests of the narrative to carry these operations in the dreary desert districts of the north-west, to a point in advance of the general operations.

TRANSVAAL.

Operations Northern Transvaal, March—April, 1901.

While the drive across the Eastern Transvaal, recorded at p. 156, was coming to an end, operations against the north and north-eastern portions, in the area enclosed on the west by the Pietersburg line, and on the south by that to Komati Poort, were being projected. The irregular square over which these operations were conducted had sides each of about 140 miles, and was divided down its centre by a river, the Olifants, which separates the flat bush country on the west from the mountainous area on the east. Hitherto we have seen very little of either of these countries. In Paget's operations through the bush veldt north to Nylstroom in August, 1900, p. 95, the fighting was nearly all in the neighbourhood of the railway. The only glimpse of the mountainous area was that afforded by Buller's operations to Lydenburg, p. 99. It was now intended to again advance along the Nylstroom line and beyond, and seize Pietersburg, a place which had never yet been visited during the war, and was known to be the seat of great activity. It will be remembered that the occupation of Pietersburg from the north was the objective of the Rhodesian Field Force, and we have seen that it fell through. Pietersburg to Middleburg (Transvaal) form the northern and southern points of the present operations; the eastern and western being indicated by Lydenburg and Nylstroom respectively. From a veterinary point the two areas of bush and mountain divided by the Olifants River are important, as one is a deadly place for horse-sickness during this time of the year, while the other is healthy, though its stupendous mountain ranges of extraordinary grandeur offer a dreadful barrier to animals engaged in military operations.

The operations now undertaken had two objects, the capture of the Transvaal Government, which lived in the mountainous region, together with Viljoen who operated from there against the railway, and the seizure of the enemy's base at Pietersburg. Columns were to be employed operating north from the Delagoa line, driving the Government and the Commandos in the direction of Pietersburg; meanwhile, Pietersburg having been captured was to be used as a base for blocking the drifts over the Olifants River, and so denying escape in a westerly direction to the quarry, which it was hoped would then be compelled to keep moving north where troops would be ready to receive them.

The first step was to be taken by the indefatigable Plumer, whom we last saw with his column in the vicinity of Brandfort on 10th March, after the big chase of De Wet (p. 156). On the 22nd of that month his column was in the train for Pretoria, and on 26th March he left there for Pietersburg. Great economy of animal life was practised by him in utilising the railway for his transport and artillery, and so sparing his animals through the sandy bush country about to be traversed. In spite of the damaged condition of the line two construction trains repaired it as fast as his troops were able to move, while a supply train kept him fed. Pietersburg was occupied on 8th April, and the commando of Beyers disappeared to the East. From Pietersburg he marched S.E. for the Olifants River, in doing so crossing the Strydpoort range of mountains, which separated him from it, through a pass in a solid granite wall only fifty feet wide. There were thirteen drifts to hold on the Oliphant's River over a distance of fifty miles, and he was in occupation of them by 10th April. Meanwhile the driving columns from the east were being placed in position. Six were employed working from Middleburg, Belfast, and Lydenburg, the whole under the command of Sir Bindon Blood, who had been brought from India owing to his

* "Official History," Vol. iv., p. 354.

knowledge of mountain warfare. The six columns had the following strength:

Lydenburg, Lt.-Col. Park	200	horses.
,, Maj.-Gen. F. W. Kitchener	550	,,
Witklip, Lt.-Col. Douglas	330	,,
Belfast, Lt.-Col. Pulteney	750	,,
Middleburg, Lt.-Col. Benson	600	,,
,, Maj.-Gen. Beatson	600	,,
	3150	,,

The number of mules is not stated, but as there were 6700 fighting men there would be about 2500 mules. The general results of these operations may be briefly stated—both the Government and Viljoen escaped. The latter being in such difficulties that he had to abandon his guns and burn his transport. The Government escaped south before a shot was fired; it crossed the line a little east of Middleburg without difficulty and proceeded to Ermelo. Viljoen awaited results in the vicinity of Roos Senekal, and made no move until 19th April. On 20th four columns were near him, two being within eight miles, yet he eluded both and crossed the Olifants River at a section which had been told off to Beatson, escaping on 22nd April by an unguarded drift, after a 19 hours march. He then deceived his enemy by an intentional march in the wrong direction, finally going south, and incredible as it may appear, camped for several days a few miles north of the line at Balmoral, and from here attacked Beatson in the rear. In the first days of May he crossed the line and joined the Government at Ermelo. These three weeks of activity had produced 55,000 head of stock, munitions of war, and many prisoners and surrenders, but the important persons had escaped.

The marching done in the mountainous districts was very trying. F. W. Kitchener covered 150 miles in the worst part of the country, but the force under Plumer had probably the most trying experience owing to the unhealthy nature of the area in which they were operating. When he arrived at Pretoria on 22nd March, before proceeding to Pietersburg, a new contingent, the 6th New Zealand Mounted Rifles, joined him. They had only arrived on the previous day after a voyage of 48 days from Auckland to East London, and a four days journey to Pretoria by rail.

They were absolutely unfit to take the field; of the 580 horses embarked at Auckland 16 died on the voyage, 57 were unable to leave East London owing to injuries, 13 died in the train on the way to Pretoria, 3 died in camp on arrival there, and 5 were sent to hospital. During the march to Pietersburg they naturally suffered from exhaustion, laminitis, and sore backs, due to the enormous kit carried; catarrh and strangles also appeared. The first case of "horse-sickness" occurred on 4th April, from that time onward cases were frequent. On 12th April the Queensland Imperial Bushmen joined Plumer; they also had just landed in the country and were entrained immediately and sent by rail to Pietersburg; a large number were unshod and many suffering from ship injuries and pneumonia. About this time cases of glanders were detected among the New Zealand horses. Next to horse-sickness the most formidable trouble was veldt sores and quittor due to the thick thorny bush country in which the force was operating. Twenty per cent. of the entire force was rendered unserviceable from this cause, and many had to be destroyed owing to septic infection.

During Plumer's operations a mobile veterinary hospital was formed at Pienaar's River which received the earlier cases, and a little later a Field Veterinary Hospital was opened at Pietersburg, to which many animals were sent from the columns on the Olifants; the distance, however, was 40 miles, which was against the quittor cases.

The following table shows the wastage in General Plumer's Force, which was of course enormously increased by the two regiments previously mentioned being absolutely unfit to take the field.

Strength on leaving Pretoria	1250	horses
,, ,, ,, ,,	1050	mules
Died or destroyed on march to Pietersburg	49	,,
Sent to F.V.H. at Pienaars River	27	,,
Strength on arriving at Pietersburg	2124	animals
Strength of horses on leaving Pietersburg for operations on Oliphant's River, 14th April (Remounts had been received since leaving Pretoria)	1732	
Died of Horse Sickness	323	
Died, destroyed from other causes	239	
Sent to F.V.H., Pietersburg	126	
Strength on 6th May on arriving at Silverton, a few miles east of Pretoria (of which 142 are unfit)	893	
Loss	839	horses.
Strength of mules on leaving Pietersburg	1145	
Casualties on march to Silverton	43	
Strength on arrival	1102	

We have here a record of 323 cases of horse sickness occurring in a strength of 1732 horses in the space of 22 days (18%), as a matter of fact no horse died from the disease after 1st of May, so that there were 323 deaths in 17 days.

The veterinary officers with Plumer's Column were Lieuts. (now Major) W. D. Smith, A.V.D., McLeod, 4th Q.I.B., Tucker 5th Q.I.B., and C.V.S. Glasse. I am indebted to Major Smith for the above statistics.

EASTERN TRANSVAAL.

Operations, May—August, 1901.

In the operations undertaken during the month of May the underlying scheme is not very clear, excepting that from north and south, *i.e.* from the Delagoa and Natal lines, columns were to advance into the interior of the Eastern Transvaal and do all the damage they could. Six columns under Blood started from the northern and three from the southern railway on 13th May, a total of 9,800 horses, and converged on Ermelo, but with no results. The columns then worked independently, Plumer taking in Bethel and then going to Piet

Retief. It was while he was sending in a convoy from Bethel to Standerton that an attack was made on it at *Mooifontein* on 25th May. Harrassed for days it was finally set upon front and rear, and the grass lighted; under the smoke from this charges were made. The only thing which distinguished Mooifontein from scores and scores of similar convoy attacks was the heavy losses. This class of work is most severe on transport animals.

An important duty falling to these columns was that of chasing the Transvaal Government; this went on continually for a fortnight, during which time the Government found itself running first into one and then into another column, but always evading capture, and even succeeding in meeting the Free State Government near Standerton. At this meeting the momentous decision was taken of prolonging the war, De la Rey undertaking to invade Cape Colony, the command being given to General Smuts.

The news of Vlakfontein, p. 163, took Allenby from the Eastern to the Western Transvaal. Beatson, while marching from the Delagoa railway to Bethel, had a portion of his column surprised at *Wilmansrust* on 12th June and was badly beaten. Three hundred and fifty horses were lost.* This reverse caused all the columns in the Eastern Command to assemble in the Bethel district, and four of these, including a new Cavalry Brigade under Babington, demonstrated from Bethel as far as the vicinity of Johannesburg, but did no good. During this time Viljoen recrossed the line, and coming in contact with Benson suffered damage.

One of the characteristics of a war of this kind is the rapid change which a few hours may bring about. In a few days the Eastern Transvaal, so recently the scene of excitement, and the hunting ground of several columns, was almost wholly deserted, they having been sent to other areas which had suddenly become the scene of renewed activity. Blood, with his column, passed in July across the line into the N.E. Transvaal, Allenby was called off in June. Six other columns, including that of Plumer, left in July. The Eastern Transvaal was quiet, but the commandos were still there, so was the Government; both required a rest, so went into hiding. One column only remained, that of Benson, whose method of operations caused the maximum of inconvenience and loss to the enemy. With an excellent intelligence system under a local officer, Colonel Wools-Sampson, he substituted night for day raids. Night work for horses is most exhausting, and a high degree of discipline is required to afford them protection from the irregularities which occur in the dark, even under skilful control. As an example of this we may take the apparently simple subject of "saddling up," an operation never easy even in daylight with a heavy kit, but in the dark it requires the greatest care to ensure that matters are satisfactory. The loose end of a strap is a prolific source of injury, to say nothing of a portion of the impedimenta resting on the spine. Benson, besides being a very fine soldier was an excellent horsemaster; he had been trained in the best school of horsemastership in the Army, *i.e.* in the Artillery. He knew what horses required, and none valued more than he the attention to detail, which is the essence of horse management. With officers and men trained in the care and management of horses, the first step had been taken to put into operation those brilliant military qualifications which unfortunately were so soon to be lost to the Army. Benson's column became the scare of the Eastern Transvaal. Long night marches of thirty and forty miles, and an attack at dawn were his chief weapons, and during the two months of July and August he kept the Republican Forces in a condition of anxious anticipation. Meanwhile Botha, who commanded in this area, though not in evidence, was not idle; he was maturing a scheme which kept him occupied elsewhere, and no reprisals on Benson were at present attempted. His scheme was the invasion of Natal, and formed part of the general programme for the invasion of British Territory, of which Smuts, whom we have yet to see, had already carried out his share in Cape Colony. Ermelo was Botha's point of concentration for this, the second Natal raid, and thither at the end of August the commandos collected.

* In this affair, Lieut. Sherlock, Veterinary Officer, Victorian Mounted Rifles, distinguished himself and was mentioned in despatches in the following terms: "At Wilmansrust when the doctor was killed he took charge of 40 wounded, and by his skill and attention much alleviated suffering and danger. An excellent officer in his own Department."—*London Gazette*, 20th August, 1901.

NORTH AND NORTH-EAST TRANSVAAL.

JULY-AUGUST, 1901.

In the north-east Transvaal the columns of Blood and Kitchener worked hard for the next two months with variable success, but the country wore out men and horses. Muller had temporarily taken the place of Viljoen, and gave a good deal of trouble. As usual when tired, the Commandos went into hiding. The columns then returned to their station, or frequently, as we have seen, were sent to some more pressing point. In the northern Transvaal columns under Grenfell, Colenbrander, Wilson and McMicking scoured the district even as far as 60 miles north of Pietersburg. Beyers, who was back in his district, gave them a great deal of work, but for the present there was no indication of his bringing his Commando together.

During the operations under General Blood in the eastern and North-eastern Transvaal further development for the care of the sick in the Field took place. A mobile hospital accompanied his columns and received the sick which were no longer under regimental care. These were driven quietly along in mobs of about 50; three natives under a white superintendent were found sufficient for this number. The animals grazed as they travelled.

The hospital was furnished with transport and was under the care of Lieut. Todd. It moved daily with the supply column, so that the difficulty of feeding animals was lessened. Finally it took up a central position at Carolina, and later at Wonderfontein, receiving not only the sick but the animals captured by columns. The sick were, from time to time, evacuated to the base hospital on the line, which was stationed at Middleburg. The reception of captured stock was disadvantageous from a veterinary point. Possible friction with the Remount Department was prevented by the Veterinary Officer in charge being made Remount Officer for the Columns.

For the northern operations the sick were sent into the hospital formed at Pietersburg.

WESTERN TRANSVAAL.

JULY—AUGUST, 1901.

The month of July saw the introduction into the Western Transvaal of a scheme of offence which was destined to assume vast proportions. The readers of this history must have been struck by the rapidity with which an area swept by columns was re-occupied by the enemy, even before the sweeping operations had been brought to a close. Lord Kitchener determined to create artificial obstructions, and for this purpose wire fencing and blockhouses were introduced. These had for some time existed on the railway, at first for the protection of bridges, but latterly for the whole length of the line of rail in exposed districts. It was now part of his scheme to enclose the country in a similar manner, and for the protection of Johannesburg an area of the Western Transvaal was fenced in and defended by the miniature forts. In this way the question of supply was simplified and the risk of capture of convoys and consequent loss of animals greatly reduced. Eighty square miles of the Western Transvaal around the heart of the State were protected by the middle of September.

The military operations in the Western Transvaal, which for two months had not been active, were marked towards the end of August by six columns, employing 6,500 horses, moving against Kemp in the Eastern part of the Zwartruggen Mountains west of the Magaliesberg. He, however, escaped further west, and in a day or two as Methuen, whose column took part in the above movement, was returning to Zeerust, Kemp attacked him in the valley of the Marico River and caused him heavy loss.

CAPE COLONY.

JUNE-AUGUST, 1901.

The enemy without transport or supplies could not have lived a week in Cape Colony had it not been for their friends and sympathisers, who were legion. Nearly the whole Dutch population was disloyal. Among the other absolute essentials to the existence of a Commando were horses, and these they furnished.

We have seen that in December, 1900, orders were issued for all animals in the affected districts to be brought into military posts, excepting those which could be protected. The result of this order was to produce some 25,000 horses, the majority of which were termed "protected stock," and have been already referred to p. 133. This did not represent by any means the horse population of the districts; nothing was easier than to hide large numbers of animals from the sight of patrols, and these were used by the enemy.

In April an order was issued that all remounts required by the columns operating in the Cape Colony should be obtained from local supply. To meet this several remount depots were opened, the largest being at Cradock, the centre of a horse-breeding district. This tapped a source of supply which had hitherto been largely neglected, for reasons discussed at p. 132. Nevertheless, the fact remains that up to the end of the war horses suitable for Commando were always at the disposal of the enemy. It was this factor which enabled the Republican Forces to roam about the Colony with comparative impunity, as may have been judged from what has already been related of their movements.

Early in June, General French was appointed in command of all the troops operating in the Cape. At this time there were nine mobile columns, an aggregate of 5800 horses. Among these were three regiments of cavalry, 9th, 16th and 17th Lancers, Cape Police, Cape Mounted Rifles, and about 1000 Yeomanry, the latter being very backward in training. * Gorringe's Defence Force was broken up and newly constituted. Scobell, Crabbe, Crewe, and Monro remained in the Field, Henniker was succeeded by B. Doran, and Wyndham and Lund came on as Column Commanders. The headquarters of General French was established at Middelburg (Cape), and Major Philips, A.V.D., was appointed to his staff as Senior Veterinary Officer.

Kritzinger, who was last seen on 7th June, was located on the 14th trekking South through the Bamboes Mountains, and was followed by Monro and Crabbe in the direction of Tarkastad. Here he was engaged and suffered heavy loss, but escaped towards Cradock, where he captured a patrol on 20th June, which entailed a loss of 60 horses. B. Doran, Scobell, and Crewe endeavoured to close him within the Tandjes Berg Mountains, lying between Cradock and Graaf Reinet, but he escaped north, while Commandant Van Reenen, who was with him, went south. A chase of 200 miles was now carried out by Crabbe, but the commando reached the Bamboes Berg in safety by the end of June. Crabbe had now to refit, and Haig was detailed to look after Van Reenen. Malan was heard of early in June as being in the mountains west of Maraisburg; he moved into those

* "Times History," Vol. v., p. 312.

south of Middelburg, and was followed by Crewe, by whom he was chased from one point to another of this extremely difficult country. On 23rd June it was found that he had gone north-west to Richmond; this he attacked and inflicted severe loss on the garrison after many hours fighting, but the arrival of Lund on 26th June drove him north-east to Hanover, where he made a stand against Lund, was defeated with loss, and he and his band dispersed.

Scheepers, whose domicile was in the inaccessible mountains to the west of Graaf Reinet, kept B. Doran engaged; in spite of being watched he attacked Willowmore, 70 miles away, on June 1. French determined to surround his stronghold by means of columns, and to send in another to hunt him out. On July 12 the troops were in position, and Scobell had already scored some success, when a gap occurred in the ring and Scheepers broke out on 15th. A party belonging to his Commando had a day or two previously burnt the railway station at Aberdeen, thirty miles south-east. When Scheepers escaped, Malan, recently at Hanover, joined him; they were followed north by Wyndham, who on 19th was still close behind; on 20th Wyndham had to halt for his transport. Scheepers then went west to the Cape Railway, and on the same day attacked and burnt a troop train thirty miles north of Beaufort West, inflicting considerable loss. He then crossed the line and went out into the west, a region where his presence was least desired. A partial recompense for his escape was the scattering of a band under Latigan (a commander who had returned with Kritzinger) by Scobell on the night of the 21st, resulting in many captures including 105 horses.

Kritzinger, who had escaped north from the Tandjes Berg in June did not proceed far, and was located by Crabbe in the middle of July. The latter, while manœuvring to drive Kritzinger south, was ambushed on 21st July at *Jackalsfontein*, east of Witmoss Station (30 miles south of Cradock), and lost 200 horses. Kritzinger was now joined by Theron who had come from the Free State. Fouché remained in the north-east near the Transkei, where he had been obtaining horses and recruits. With him were Myburgh and Erasmus (two more Commandants lately brought across the Orange River by Kritzinger); they had previously been chased by Wyndham in the Molteno district, and now went north to Fouché whom they joined on 7th July. Two mobile columns existed in the north-east, one under Monro at Dordrecht, another under Moore at Aliwal North. Munro accordingly followed Myburgh and Erasmus northwards, and Moore came out of Aliwal to deal with Fouché. On 14th Moore was seriously engaged with Fouché north-east of Jamestown; the action lasted all day, and Moore retired. On 19th, having been re-inforced, he followed the enemy west, and coming into contact there was fighting on 20th and 26th; Fouché finally disappeared over the Orange River on 28th. Myburgh and Erasmus were joined by a fresh Commando from the Free State, and were attacked by Gorringe on 30th July north of Dordrecht. Gorringe chased them for a week, surrounded the body near Steynsberg and did considerable damage, but the Commando broke through.

These various Commandos had had some experience of the hustling principle which had been inaugurated, and French now considered they were suitably placed for driving tactics to be established. His force was contained within a vast square of the midland district, of which the railway forms three sides. With his eight columns placed at intervals, on a line running from Victoria West—Middelburg—Sterkstroom (from point to point a distance of nearly 200 miles), he marched them south on 30th July over a narrow front so as to enable the various Commandos to get between and behind them. The distance south was 70 miles; it necessitated crossing the mountain range which, under various names, runs transversely across the Cape from Beaufort West to Stutterheim. When south of this range on 3rd August his columns were dispersed from Beaufort West, through Aberdeen to Witmoss and on to Seymour, points 240 miles apart. They then turned about, opened out, and on 6th facing north drove for 100 miles towards the railway connecting De Aar with Stormberg. Scheepers at once broke out south near Aberdeen, and was followed by Alexander and Atherton, but seven Commandos were left between the driving line and the railway.* There were many fights during these operations. Scobell engaged Lotter and C. J. Botha, Crabbe and Kavanagh were busy with Kritzinger, all on the eastern end of the advancing line. Doran and Wyndham at the western end were dealing with Theron and Smit. The former escaped south, Smit was pressed north, and just west of Middelburg was joined by Lotter and Botha, behind whom was Scobell and Hunter-Weston (a new column commander). B. Doran coming up joined in the pressure and forced the three bodies north against the railway. Smit, however, escaped west, but Lotter and Botha were pressed in to the railway by Hunter-Weston, Scobell, and Kavanagh. Some days prior to this Kritzinger had also found himself against the railway, which was now not only blockhoused but patrolled by armoured trains. These he faced, broke across the line on 10th August, went to Steynsburg, and reached the Zuurberg mountains, where he found the two commandos of Van Reenen and Wessels. Gorringe and Crabbe were in hot pursuit, and driving the three bodies north compelled them after a 50-mile ride to cross the Orange River, inflicting severe loss on Kritzinger on 15th August. Lotter and

* No sweeping operations could take place until the railway was blockhoused and wired in. This hitherto had not been necessary on the Cape lines. It seems almost beyond belief that a blockhoused barrier, 240 miles in length, was erected in fifteen days. See "Times History," Vol. v., p. 314.

Botha hemmed against the railway boldly attacked it on 16th August but failed; their capture appeared certain. They turned on the converging columns, discovered a gap between them, rushed through in the dark and escaped south to the stronghold in the Tandjes Berg 50 miles away. Followed by Scobell and Kavanagh they were engaged in these mountains, separated and broke away. Scobell with B. Doran, who had just come up, chased Botha to the east, while Lotter remained in the Tandjes Berg, there being no available force to deal with him, Kavanagh having been withdrawn in consequence of news received that Theron was travelling hard from the south. Scobell and Doran wore down C. J. Botha's commando but did not capture the leader. On 30th August they were refitting at Cradock. Smit when he went west made for Britstown followed by Lund, Bentinck, and Wyndham. Wyndham pursued him west of the Cape Town line for over 300 miles during August and the first days of September, finally losing him south of Sutherland.

Scheepers we have seen went south, Alexander and Atherton being in pursuit. He was located south of Uniondale in the middle of August. Alexander attacked him and was driven back with relatively heavy loss.* Atherton joined in and followed Scheepers, who going west in the direction of Cape Town caused grave anxiety for the stores collected at Swellendam and the remounts at Worcester. Nor was Scheepers now the sole anxiety, Theron reappeared, he was going south from Prince Albert. To deal with him another column had to be sent, and Kavanagh went from Graaf Reinet to Willowmore, and on 2nd September moved against Theron, who was near Oudtshorn.

It was in the early days of September that the first real success was obtained in this exhausting campaign in Cape Colony which had now lasted eight months. Lotter we last saw in the Tandjes Berg. Here on 1st September Scobell made arrangements for dealing with him. It took four days to execute these in such a way as to deceive Lotter. He was in fancied security in a farmhouse near the village of Petersburg, situated in the Tandjes Berg mountains, due east of Graaf Reinet. The farm was rushed just after midnight on 5th September and the whole commando and leader captured after severe loss. Two hundred of his horses were also captured.

The total number of horses engaged in the foregoing operations was 10,500, distributed over eighteen columns. Their losses are unknown, but were very severe; this may already have been gathered from the above record of the exhausting work they were called upon to perform. Numerous rest camps were established by General French to which horses were sent before being utterly done up; these were a sound economical measure.

* It was during this attack that Lieut. (now Major) Carr, A.V.C., was severely wounded and captured.

SOUTH-EAST TRANSVAAL.

Botha's March upon Natal, September, 1901.

Gough's Disaster—Forts Itala and Prospect.

It was on 2nd September that General Botha set out from the neighbourhood of Ermelo (p. 167) for Piet Retief. His projected invasion of Natal had not been kept secret, it was talked of in Natal itself, and probably regarded as "bluff." Nevertheless, it was considered advisable to strengthen the scattered forces in the area of hostilities by bringing in columns from without; some of these arrived about the middle of August. Pulteney's (late Beatson's) Column from Standerton and the Johannesburg Mounted Rifles under H. K. Stewart went to Utrecht and Dundee respectively, and raiding into the district of Vryheid found no enemy but heard many rumours. Stewart remained at Dundee 8th September, and Colville from Standerton marched north-west in the direction of Amsterdam, thus crossing the road which Botha had already taken south. The latter's progress was delayed by the heavy rains which had set in. Wheeled transport in this extremely difficult country was impossible if speed meant anything, so that Botha's supplies were carried by pack animals. Meanwhile information of his movements was obtained very slowly, but further troops concentrated at Newcastle and South; Gough's Mounted Infantry came from Kroonstad in the Orange Free State, arriving at Dundee on 13th September; Garrett's column from the same State on 6th September and proceeded to Wakkerstroom. In due course Allenby from Pretoria, I. Hamilton from Klerksdorp, and Speirs from Kroonstad followed; Rundle closed the Drakensberg to the west, and Elliot with his strong Division lay on the far side under their slopes, ready to act on either side of the mountain range. Practically all these movements were by rail, a saving in one sense to the animals concerned, though train injuries were both frequent and serious.

Botha was still going south, but the weather had told on his horses which were weak through want of grass which had not yet grown, so that he lost many on the way. Nothing definite was known of his movements until the 14th September, and it was then ascertained that he was marching on Utrecht. Pulteney at Wakkerstroom was the nearest to this point, 28 miles away; the weather was atrocious for wheeled transport, and it took three days to cover 14 miles, while Botha, marching with pack transport, was putting in 11 miles daily. By the the 17th he was at Blood River Poort, a few miles east of Vryheid, and within 7 or 8 miles of the nearest point on the Natal frontier, which is here most irregular in configuration.

Gough and Stewart, originally at Dundee, were, on 16th September, at De Jager's Drift across the Buffalo River, on the Dundee-Vryheid road, along which a convoy was expected from Vryheid. To

ensure its safety in the present unsettled state both forces on 17th proceeded along the road, and finally arrived at Blood River Poort and saw a party of the enemy. These off-saddled and turned their horses out to graze, and Gough, determining to benefit by the opportunity thus afforded, swooped down on the incautious party, directing Stewart, a mile or so behind, to follow. As he advanced with his force of three companies of Mounted Infantry and two guns, he was charged by two bodies of the enemy who had been unobserved; the first charge crumpled up his line from right to left, the second one struck him in front. In twenty minutes the whole of the survivors were prisoners, and forty-four were killed or wounded. All the horses, 250 in number, were lost, and the two guns.* Stewart behind could do no more than save the transport and hold the drift at De Jagers leading to Dundee. The effect of Gough's obliteration was to produce the "sensation" which Botha in a letter previously written to Viljoen anticipated. Clements came from Standerton and took over the forces of Stewart; Pulteney and I. Hamilton then concentrated at De Jager's Drift. Bruce Hamilton was brought from the Free State to direct the columns of Speirs and Allenby, which, since the 23rd, were lying at Vant Drift, 15 miles south of De Jagers, and Botha, without attempting any passage of the Buffalo as it was in flood, went almost due south in the direction of Zululand, and made for a point held by two forts, Itala and Prospect. He moved slowly; it is said his horses had suffered severely from heavy ground and exposure,† and it was 26th September before he reached the forts, 60 miles away from the scene of the disaster to Gough. During these nine days every preparation had been made to defend the positions.

Itala is the only one which interests us. It was held by 300 men of the 5th Division Mounted Infantry, the veterinary officer being C.V. Surgeon Probyn. The horse lines were placed in the centre of an entrenched position, which occupied a level surface at the foot of a long ridge running from Itala Mountain. There was really no fort, but merely open trenches with no cover for the animals. The attack on *Itala* began at 2 a.m. on 26th Sept. It was not unexpected; the garrison had been warned by Zulus of what was about to occur. What the "Official History" describes as a "whirlwind of bullets" from 1500 rifles opened the fight, the first phase of which ceased just before dawn, but was renewed at daylight with still greater intensity. From all sides there streamed in a storm of lead so heavy that "it seemed as though the defence must shortly be blown to pieces."* A ring of fire was poured out for twelve consecutive hours, at the end of which the enemy retired having suffered heavy loss. The British evacuated the position at midnight, leaving 59 wounded behind under the care of C.V. Surgeon Probyn.† Nearly all the horses, 222, of the M.I. were killed.

Meanwhile, *Fort Prospect*, 15 miles away, was attacked for twelve hours, but this place was properly protected, and after a severe struggle the enemy withdrew. Bruce Hamilton at Vant Drift, 48 miles from Itala, started for its relief with 1600 men without transport, and in twenty-three hours reached Itala on 28th Sept., a great but useless march, as Botha was on his way north and the garrison had relieved itself.

The plan to catch Botha in this awkward part of the Transvaal led to a good deal of marching. As a matter of fact he was in a quandary; there was only one outlet to the high veldt available, and this was 100 miles away, but he wriggled past the various columns sent either in pursuit or to cut him off, and emerged from this pocket of the Transvaal unscathed. In this matter of cutting off Botha our forces moved slowly owing to the nature of the country and the use of ox waggons as transport. It was worth a supreme effort to effect the obliteration of this Commando and its gallant chief. Bruce Hamilton, after his march to Itala, turned north and followed, but he was too far behind. W. Kitchener was within ten miles of the enemy, and Clements not more than thirty miles off, but errors and misunderstandings arose and nothing effective resulted. Plumer had been brought from the south of the Free State, but was too late to be of use. Eight columns in all were employed in the endeavour to cut off Botha; it gave the animals an enormous amount amount of work but with no results. The roads were bad, as evidence of which may be quoted the fact that it took W. Kitchener five days to march twenty-seven miles. Heavy rains and mists made matters extremely difficult; day by day the horses of the various columns became more and more weakened by exposure, and the effects of insufficient food. The escape of Botha from an impossible position was soon to meet with its penalty.

* C.V.S. J. H. Walker (now Agricultural Dept., S.A.) was the veterinary officer with Gough's M.I., and has been good enough to furnish me with notes of this disaster. Gough took the greatest care of his horses; he adopted every expedient to save them and get them in condition. A parade of the sick was held daily, and all his officers, following his example, strove hard for efficiency and reduction of mortality. Especial attention was given to the prevention of saddle injuries. The 250 horses captured by Botha must have been a valuable asset to his force, as they were all in hard condition.

† "Times History," Vol. v., p. 343.

* "Official History," Vol. iv., p. 220.

† At the close of the first phase of the fight, the medical officer of the garrison went out to render assistance to the wounded of a party which was outside the defence at the moment of attack. He was captured by the enemy, so that when the second attack was made there was no one to attend the wounded of the garrison, at a time when men were falling rapidly. C.V.S. Probyn, now Captain A.V.C., during the twelve hours this stage of the fight lasted took entire charge of the wounded. For his services on this occasion he was mentioned in Lord Kitchener's despatch of 8th Oct. (*London Gazette*, 3rd Dec., 1901). Colonel Chapman, 5th Mounted Infantry, who commanded in the defence, greatly appreciated the care and skilled attention given to his wounded men, which must have resulted in the saving of much suffering and of many lives.

There were 9000 horses and an unknown number of mules and oxen employed in these operations. The losses were very heavy, but are unrecorded. The names of only a few of the veterinary officers accompanying the columns are known, so that no list can be attempted.

EASTERN TRANSVAAL.

October, 1901.

Bakenlaagte.

Botha arrived at Amsterdam on 11th October, and here received a report of what had occurred in his absence. At present his movements were unknown. Matters in the Eastern Transvaal were in a bad way, for Benson's column (p. 167) had been running riot, and became the fear of the country. All during September he had been dealing heavy blows in the Caroline district, and performing marches which hitherto had never been attempted on an extended scale. For example, on the 10th, 15th, and 16th long night marches brought their reward: on 18th a forty mile ride was followed by a smart attack on a laager and heavy captures. He travelled with a moveable supply depôt, but in spite of all this transport, for the care of which he took infantry, it did not fetter his mobility. The enemy had to conform, and accordingly never spent two consecutive nights in the same laager, and their horses were saddled up before daybreak.

The veil was lifted as to Botha's movements on learning that he was at Athole on 18th October, and two columns brought from the Vaal to Standerton, commanded by Rimington and Rawlinson, were sent against him. Their operations on 25th October nearly resulted in his capture, he fled just in time, leaving his correspondence behind. After some other operations the two columns returned to Standerton to refit.

Meanwhile Benson had refitted at Middleburg, where many of his seasoned and trained men had been exchanged for those who had been doing line of communication work. He left on 20th October with over 900 mounted men, infantry, 230 mule and 120 ox waggons, and about 2300 mules and 1450 oxen. We give these numbers as indicating the amount of impedimenta necessary to enable even a small force to keep the field for several consecutive days. He was now, 30th October, returning to the line for supplies after a not very successful tour. The weather was wet, the drifts difficult, and a high wind blowing in the face of the transport did not help matters. From early morning he had been harassed by the enemy, and by mid-day the forces around him had greatly increased. It is now known that at this moment Botha with reinforcements had arrived. Benson's operations had aroused a feeling of intense irritation on the part of the enemy, and for some days arrangements were being made to deal effectively with him. He was now alone on the high veldt, and the time had arrived. Botha, whose whereabouts was unknown, rode seventy miles, of which thirty were without drawing rein.* Some of the commandos joining him had done their sixty miles in twenty-four hours. All were anxious to avenge the losses they had experienced. Benson, now on his way to Middleburg, was the objective.

Benson had been marching since daylight under disadvantageous conditions owing to rain and mist; the enemy was causing some trouble, which increased towards noon. This, though not known at the time, corresponded to the arrival of Botha and the other commandos. A little later some waggons stuck in the mud brought Benson to the spot at a time when pressure was being exercised on the rearguard. The commandos now advanced rapidly, the escort galloped after the guns, which had been sent on, and left the waggons to the enemy. This small force of 280 men of the Scottish Horse and Yorkshire Light Infantry, M.I. and two guns took up position on a ridge, and here the drama was enacted. The ridge was a little more than a mile from the place selected for the camp at Bakenlaagte. At the latter the transport had safely arrived.

In the attack on the ridge the enemy adopted the new galloping tactics. They advanced on it in line, having a front nearly a mile and a half in length; 2000 men galloping, shouting and firing from the saddle soon reached the ridge, where they dismounted and opened fire on the small band. The "Official History" † must tell the story.

> "So grand and terrible a spectacle had not been seen, nor had the earth so shaken on any battle field in South Africa. . . . . Alone on the gigantic bosom of the veldt the little knot with Benson calmly faced the approaching catastrophe. . . . . Flight was still possible, the horses were at hand . . . . . but no man stirred from his place. . . . . In a few minutes a tempest of lead burst at point blank range upon Benson's soldiers. . . . . Guiness . . . ordered up the horses to attempt to drag the guns away. The teams were shattered as soon as they appeared on the rise, and not one of their riders rose from the heap. . . . . The final scene soon came. When silence told the Boers that resistance was extinguished they rose in five dense rows, poured over the ridge, and swarmed about their handiwork, some still firing furiously, some stripping the corpses, some with unusual ferocity robbing and even shooting the wounded, others hurrying forward to the reverse slope to seize the led horses which stampeding madly, added the thunder of their hoofs to the uproar."

Benson, who was still alive, sent a man who had been stripped of all but his shirt running to the camp and directed his own guns to play upon the ridge where he lay. Shrapnel rained down, and the enemy evacuated the ridge now occupied mainly by the dead and dying. Of 280 men, 66 were killed and 165 wounded. Among those who lived through the fierce fight were the medical and veterinary officers of the Scottish Horse, the latter being C.V S. C. M. Sharpe (now Agricultural Dept., S.A.), whose horse was killed. Once more, as at Wilmanrust and Itala, the veterinary service was able in a time of great crisis to apply its technical knowledge in the relief of the wounded men.

* "Times History," Vol. v., p. 367.

† Vol. iv., p. 311.

The losses among the animals were confined to the guns and M.I. horses, the transport animals being in camp; this Botha did not attack. Columns from east and south were soon on their way to the relief of Benson's remnant. G. Hamilton from Standerton with the columns of Allenby and De Lisle, 2000 mounted men, marched 52 miles in the 16½ hours, and Barter near Springs marching through the night covered 30 miles between dusk and dawn. Both columns arrived at Bakenlaagte on 1st November and provide noteworthy examples of forced marches.

ORANGE FREE STATE.

Operations, July—December, 1901.

Elliot's Drives—Smuts Invasion.

Quaggafontein, Slangfontein, Tafel Kop, Tweefontein.

In the first half of July four columns under Bruce Hamilton continued to harry the south-western and western portion of the Free State, until required to block the driving line for Elliot in operations described below; on the east of the railway, during the same period, C. E. Knox with two columns was raiding Brandford, Thabanchu, Senekal, and Winburg. Immense supplies were obtained by him, among others 16,000 head of stock, and a few days later 70,000 head from districts so frequently "cleared" that it was impossible to believe anything remained. A better example of the difficulty of clearing a country—operations which were the chief source of horse exhaustion now that the enemy would only fight when it suited him—will be given presently, and refers to this identical district.

The news of Smuts projected invasion of Cape Colony (p. 167), led to a fresh distribution of the columns. It was obviously desirable to close the Vaal as soon as possible, and various forces converged on it. Henry and Paris on the western line proceeded to the Hoopstad district. Western left Klerksdorp and proceeded to the Vaal in that section on the direct road to Bothaville. G. Hamilton, also from Klerksdorp, occupied the river lower down, and Elliot, whose division after refitting at Vredefort Road (p. 160) marched N.W., crossed the Vaal, and was at Klerksdorp on 24th July. Meanwhile Smuts, who set out on 15th July, had evaded the columns sent to look for him, and was making for the rendezvous he had appointed for the three other parties who were to join him. Their numbers were small, all four only totalled 340 carefully selected men. The party under Smuts reached the Vaal south of Klerksdorp on 28th July, and while searching for a passage became aware that seven columns were leaving Klerksdorp and marching south. These columns were about to take part in the largest sweeping movement to which the Free State had been subjected. They formed part of a big scheme for clearing the whole of the N.W. part of the State from the Vaal on the north to the railways east and west and south as far as a line drawn from Bloemfontein to Jacobsdal. The railway lines had been blockhoused and fenced with barbed wire, the southern line—Bloemfontein-Jacobsdal—consisted of constabulary posts, behind which was a second barrier consisting of columns, and again behind this a third barrier of columns extending from Edenburg to Orange River Station. A glance at the map will give some notion of this vast undertaking, the track to be swept was 120 miles long and 100 miles wide.

In addition to the seven driving columns with Elliot there was to be one behind him to prevent the enemy breaking back, and others on his flanks in the advance to keep the enemy from breaking out at the sides. One of these columns was furnished by Plumer, who was placed near Modder River Station, having for the purpose of this "drive" been brought from far off Carolina in the Eastern Transvaal. The total number of columns employed was seventeen, with 13,200 horses, exclusive of transport animals. From the 29th July to the 10th August the "drive" continued, and on the latter day Elliot reached the Modder River. The results, so far as stock was concerned, were good, 186,000 sheep and 21,000 cattle, together with 814 waggons, but the prisoners were few. *

Smuts and his party were not in the net in which he by accident found himself. With almost unparalleled coolness and audacity he had quietly followed behind Elliot and took advantage, while the latter drew to one side to cross the Modder River, of rushing over, charging through the line of constabulary posts, and after hair breadth escapes from the columns behind this line, he crossed to the west of the blockhoused railway at Jagersfontein Road on 18th August, and reached his next rendezvous at Zastron in the S.E. corner of the Free State. From captures and fire his numbers had been reduced by one hundred men.

Elliot's column on conclusion of the big "drive" faced east, and refitted at Glen. Here with his original force he formed a line between Glen—a few miles north of Bloemfontein—and Ladybrand, points 70 miles apart, and drove on the 18th August in a N.E. direction across the Free State. The idea was to entrap the enemy in the Brandwater Basin where Rundle was waiting to deal with them. Any attempt to break away from Elliot to the north was to be stopped by four columns operating from Winburg and Senekel, but the general results were barren.

Meanwhile, in order to deal with Smuts and his band of stalwarts at Zastron, two columns were detailed and from these he suffered further loss. At Zastron he had met Kritzinger, who had been

* Elliot reported that the fighting men "he had been unable to capture need not be reckoned with for the future, so little spirit remained in them." "The Official History," Vol. iv., p. 260, adds:—"It will appear later how greatly he undervalued, not only the numbers, but the quality of the game which had escaped him."

driven out of Cape Colony in operations yet to be noticed. Untiring efforts were made to surround these two dauntless men with their following of 500, and for this purpose four more columns were poured into this area, one coming from as far off as the Magaliesberg. Fifteen miles away was the Orange River: it was held by Hart with three columns, two garrisons, and a line of blockhouses; nevertheless Smuts crossed on 4th September with small loss, Kritzinger remaining behind to keep the columns employed, and then disappearing into space. The next time that Smuts crossed the Orange River was as a Peace delegate.

The "Official History of the War," after remarking on the almost unaccountable failure of the British combination to stop this leader's progress, adds, "Throughout the campaign in South Africa there was scarcely a more striking feat of perseverance, daring and good fortune, than Smuts' ride of 300 miles, through one British army after another from the Gatsrand up to and over the banks of the Orange River." *

The "Official History," † in commenting on the disastrous escape of Smuts, ‡ from what appeared to be an impossible position on the north bank of the Orange River, points out that the investing columns so exhausted themselves by skirmishing, that at the critical moment they had to pull into the railway to refit. It attributes this to the neglect to appoint a single and supreme commander on the scene of action. ‖

While Kritzinger was lying in the neighbourhood of Zastron he was surrounded by no less than seven columns, two under Plumer, two under Thorneycroft, and one each Rawlinson, Basing and Damant, yet he, with other small bodies of the enemy under Brand, were able to defy capture and even to raid the district. * About the 16th September they parted, Kritzinger going south to the Orange River, where at *Quaggafontein* on 20th he destroyed a party of Lovat's Scouts, while Brand went north, and on 19th September captured at *Slangfontein*, near Sannah's Post, a small force of 170 M.I., Constabulary and two guns, which was out on a raiding expedition. All the horses were lost.

Strange to say Kritzinger did not cross the river after Quaggafontein, though it was open to him; he returned to his hiding place with the captured horses, rifles and ammunition, when by chance Thorneycroft ran into him and inflicted punishment, though Kritzinger was not included. Plumer near at hand could have taken up the matter but for the fact that he was suddenly called to the neighbourhood of Sannah's Post in order to deal with Brand's Commandos, which had captured the M.I. and guns. Thither also Rochford from the western side of the railway had despatched six columns, but nothing resulted, the Commando had vaporized. Plumer, however, made another march south on 27th September, passing down the left bank of the Caledon with Du Moulin's column, where he had a skirmish on 1st October. He reached the railway at Springfontein, and was soon in the train being hurried to the south-east part of the Transvaal in connection with Botha's invasion.

Elliot's visit to the Brandwater Basin, referred to above, resulted in the capture of 100,000 head of stock, which were taken to Winburg 6th September, together with vehicles, and the destruction of 850 tons of wheat. On 8th September he made another march east; the clearance now made was still greater, and on 17th he was directed on Bethlehem in consequence of Botha's raid. Elliot arrived at Bethlehem on 22nd, and reached Harrismith on 26th September with 60,000 head of stock, waggons and agricultural produce. He now lost Bethune who was required in Natal, and Speir's column, while that of Dartnell, operating in the Harrismith district, was also withdrawn to Natal. Elliot's duty was to watch the Drakenberg until the Botha raid died out.

Rimington continued through September carrying out the class of operation noted as taking place in August. One of his journeys was to surprise De Wet and Steyn between Heilbron and Frankfort. In quest of them he performed long and rapid marches; on 23rd he marched 48 miles and made

* "Official History," Vol. iv., p. 268.

† Vol. iv., p. 267.

‡ It was due to his influence, and above all his strong personality, that Cape Colony for the remainder of the campaign was never free from Commandos. It was Smuts who actually organised, and very nearly succeeded in carrying the war into the streets of Cape Town. Young, bold, vigorous and eloquent, he was a natural military commander with no training in the science of war—for by profession he was a lawyer—and nearly succeeded where Botha, De la Rey and De Wet failed. His military skill stands out even in such a body as the Republican Forces, where almost every man was potentially a General.

‖ It may seem a far cry from military operations to veterinary organisation, but the criticism above made holds equally well. It is impossible for one man centrally situated to control the hundred ramifications of such an intricate and widely-spread machine as was employed in this campaign. When the authorities were begged to create administrative veterinary officers from the lower ranks by giving them temporary appointments, it was refused as unnecessary. Yet, in no other way is it possible to co-ordinate the work of the large body of executive than by the control and supervision of a staff of administrators. It is economical from every point of view, the work is equally distributed, local difficulties met which cannot brook delay by reference to headquarters, and machinery kept moving. In this way exigencies are met as they arise, and not a few hours hence when it is too late to be of any use, while the work of officers and care of the sick are properly supervised. A body of executive officers without administrative control on the spot, or within reasonable distance, is like a flock of sheep without a shepherd. If this is the case where the whole personnel is trained for war, it can be imagined how much more necessary administrative control becomes, when five-sixths of the staff are civilians without any previous military experience or training.

* Later on Damant went north to guard the construction of the Heilbron-Frankfort blockhouse line, Plumer went into the S.E. corner of the Eastern Transvaal, but four other columns were brought in which operated under Knox from central entrenched camps, and cleared the district of supplies.

many captures, but not those most desired; on 24th he rode 57 miles during the night and surrounded a house in which De Wet was supposed to be lying ill. The "Official History" draws attention to the fact that these forays could scarcely have been equalled by the enemy.

The other operations in the Free State during this time were largely suspended in consequence of Botha's descent on Natal. Elliot remained, but was guarding the Drakenberg; De Lisle and Broadwood were not entirely idle, but their operations were small. In Rundle's area some work was accomplished by a column under Briggs, who in return was attacked by De Wet, by the new method of charging, and narrowly escaped destruction. The fact was that Rundle's three mobile columns were very weak in mounted troops. He had at Harrismith a considerable number of Yeomanry who were in the stage of elementary intruction.* These men knew nothing of the care and management of horses and appeared disinclined to learn. They used up animals in their training at a rate with which it was impossible to cope; they neglected the horses which were under their care, and though they possessed some self-sacrificing veterinary officers of considerable ability, their task was rendered entirely unprofitable for want of higher support.

In September, Bruce Hamilton having gone to the Natal border, his columns became scattered. Byng and Dawkins went to guard the construction of a block-house line running south from Potschefstroom into the Free State, and during this month had many successful night raids. It was again observed how trifling was the effect of the passage of a clearing column unless it remained in the district and systematically devastated a given area. Byng found that places in the path of Elliot's big drive were once more in occupation and even replenished, though but a month previously they had been swept over by his numerous columns. Elliot himself found at his second visit to the Brandwater Basin, that farms which had been cleared were again replenished; as the "Official History" remarks † "No resources are so difficult to dry up as those of an agricultural people." It was recognised that something more than "drives" were required to clear a district.

To meet this, columns were no longer to sweep districts which formed important sources of supply, but were to remain in them and clear a definite area "of every living creature." ‡ Ten columns under C. Knox now took up the "fixed area" scheme in the region north of the Orange River in the south-east corner of the State, and remained there two months. Fighting and raiding went on day by day; it was then realised the enormous difficulty of clearing even a small portion of the enemy's country. Sufficient grain was found "concealed in false ceilings and by false walls to feed the Boer forces in the district for years.* Further, several Commandos of between 200 and 300 strong were unearthed, though the district had previously been scoured by columns scores of times. The continuous work which all this represented for the horses need not be further pressed.

Elliot's guard of the Drakenberg was not an idle time; before the end of October 26,000 head of stock had been collected and many waggons.

Rimington had passed into the Eastern Transvaal in October, and his place in the Heilbron district taken by Wilson and Damant, the latter guarding the block-house line being constructed to Frankfort. Fighting around Heilbron now occurred, although the district was believed to be empty. Wilson was attacked and a party ambushed; Damant had a strong Commando around him, and 1500 were known to be near Heilbron. These were attacked by Damant and dispersed, but the presence of such large bodies of the enemy was indicative of some preparation for reprisals. De Wet had long been silent, but towards the end of October it was known that his Commandos were assembling on the Liebenbergs Vlei River, 45 miles south-east of Heilbron, and a plan was made to surround him; "unlimited ingenuity and thought were lavished on the scheme." † Briefly, it consisted of a ring having a diameter of 150 miles. Thirteen columns, containing 15,000 horses, were thus employed, and on 6th Nov. the contraction of the ring was effected in six marches. It led to 14,000 head of stock, 200 waggons and a batch of prisoners, but no large body of the enemy was within the circle. The information of the convergence had been flashed by heliograph from hill to hill, and the Commandos had marched out while the gaps in the circle were still wide. ‡ The columns now dispersed, and two of them were attacked on 16th Nov. when near Heilbron, evidence that the enemy was still in being.

* The "Times History," Vol. v., p. 432, says:—"There were 3,000 untrained Yeomanry sent him in April, and the majority of the officers, with 20 per cent. of the men, were sent home as useless."

† Vol. iv., p. 325.

‡ On 11th July, 1901, an Order was published in which it was pointed out that the speedy termination of the campaign depended on the relative horse supply of our own and the enemy's troops. It was there stated that the enemy was reduced to riding mares and young stock, and to prevent this column commanders were directed to collect and destroy at once all such animals which were useless as remounts. This is the Order referred to in connection with Elliot's column at p. 161.

The Order goes on to say that to clear the country of horses is essential to peace and its subsequent maintenance, and that it is impressed upon all commanders "that there must be no hesitation about destroying useless horses and young stock on the ground that they can be of no use to the Boers, cost nothing to feed, and that it is a pity to destroy them. That they should eventually grow up to carry an armed Boer to the disturbance of the public peace is exactly what it is desired to prevent."

* "Official History," Vol. iv., p. 328.

† Idem, p. 331.

‡ Idem, p. 333.

During the remainder of November Rimington and Damant raided, the former sometimes north of the Vaal in the vicinity of Greylingstad, sometimes south. Elliot also made another drive; leaving Harrismith on 19th Nov. he worked by Bethlehem and Lindley to Kroonstad. At Lindley, without knowing it, he passed close to De Wet who was awaiting a Council of War. As far as Bethlehem he was supported by Rundle and Dartnell. There was constant skirmishing, and when he entered Kroonstad on 30th Nov. he brought with him 42,000 head of stock and many waggons. Rimington, a day or two before this, had suddenly descended south from Frankfort in consequence of news regarding De Wet being between Reitz and Lindley holding the above-mentioned Council of War. He made for the point with Wilson and ran into a hornets' nest, De Wet was present with several Commandos. Rimington's transport, some miles behind, was attacked, and was only rescued with difficulty and the attack driven off. But De Wet coming up with superior forces arranged to cut Rimington off from Lindley, which was only five miles away. A severe storm delayed his arrangements. During the night Rimington stole away in the opposite direction to Heilbron, and saved himself the fate of Benson. Next day De Wet entered Lindley; it was evident that after the long period of eight months since his retreat from Cape Colony he had once more opened another and, as it proved, his last campaign.

In consequence of the recrudescence of the noted leader another drive was planned, in which the impression to be conveyed to the enemy was that it was to take place in an easterly direction, but on a given date all the columns were to double back, drive to the west, and so enclose the Commandos which it was hoped would have passed from east to west for safety.

Again we must realise the nature of this gigantic undertaking. Elliot with his columns was to march east from Kroonstad on December 8th. Rimington and Wilson were to leave Heilbron and join Damant at Frankfort, and move to the line of the Liebensbergs Vlei, which runs south to north immediately to the east of Bethlehem, Reitz and Frankfort. This movement was effected by 11th Dec. Meanwhile, it was known that De Wet was south of the line of drive, having collided with one of Elliot's columns on the first day's march from Kroonstad, nevertheless the columns now faced about, and for four days drove west towards the railway. The results were trifling, the real objective of the operations was 40 miles south awaiting the dispersal of the columns and organising his forces which were daily growing in strength. But the columns did not disperse, on the other hand five* converged on the very place he had recently occupied, but they saw nothing of the enemy nor did they all see each other. They returned to their bases, Elliot proceeding to Kroonstad after six weeks continuous operations. De Wet, on the other hand, was well informed; he was now north of Bethlehem awaiting the return of the Harrismith column under Dartnell. This latter he ambushed on the 18th only eight miles from Bethlehem, and fortunately failed. He had to deal with the Imperial Light Horse, whose experience dated from the first day of the war.

After Elliot's last drive, Rimington and Damant returned to Frankfort, where they again worked in conjunction protecting the block-house line then under construction from Frankfort to Vrede. Here on 20th Dec. at *Tafel Kop* Damant met with almost complete extermination of a portion of his force, due to the enemy posing as Yeomanry and advancing to point blank range before being discovered. It was a repetition of Bakenlaagte in the devotion shown to save the guns, seventy-seven men out of a total of eighty being killed or wounded. All the horses were lost so that the guns could not be carried away by the enemy, and meanwhile reinforcements, including Rimington, completely turned the tables on the victors.

De Wet after Tafelkop lay near to the block-house line running from Harrismith to Bethlehem, in the difficult Langberg hills, collecting his Commandos, now 1200 strong, though at this time the local Intelligence Department reported the existence of 70 in the neighbourhood. Nine miles west of Elands River Bridge, itself 18 miles west of Harrismith, a party of the 11th Batt. Imperial Yeomanry, 500 strong, was safeguarding the construction of the line, their camp being on a hill at *Tweefontein*.† It was Christmas Eve, and since the 21st Dec. the hill had been occupied. During this time it had twice been personally reconnoitred by De Wet. He had marked down the troops on this lonely hill for destruction, and no better night could be selected than Christmas Eve. The men were in tents and the horses picketed a short distance away. At 2 a.m. on Christmas day the camp was suddenly attacked, the enemy was actually in it before being discovered, and swept the place with fire. They then charged down the hill on to the tents and horse lines shouting and shooting. In an hour the work of destruction was completed and the looting began. 145 men were killed and wounded, 200 taken prisoners. All the horses were lost, killed or captured. The Kaffir transport drivers with the column were shot out of hand. The Burghers made a good Christmas breakfast, and then left with guns, waggons, and loot at 4 a.m. A messenger to Elands River Bridge for help did the thirteen miles under the hour, and the Imperial Light Horse galloped out, but were unable to pursue the enemy who had already vanished into the hills of the Langsberg. On the 25th, De Wet marched north, and leaving his force, in order to visit Steyn, directed his Commandos under Prinsloo to keep between Reitz and Heilbron.

* Three from Kaalfontein (between Lindley and Kroonstad), one from Winburg, and another from Harrismith.

† We have adopted the official name, the hill was Groen Kop.

Meanwhile, Elliott at Lindley had been directed to march on Reitz, and left Kroonstad on 26th Dec. His force of 2000 men was now in two columns, one under De Lisle, the other R. Fanshawe. On 28th, Elliot came in contact with Prinsloo's force, but was outwitted by the Republican General who escaped north. Contact was again obtained, but was lost at night after a remarkable march by Elliot of 70 miles. To accomplish this, half of Elliot's force marched east without guns or transport. De Wet rejoined his force passed to the east, where he dispersed his Commandos, while Elliot went to Lindley for supplies.

The number of columns engaged in these operations in the Orange Free State was between 30 and 40. During July and August there were 37 columns employing 23,200 horses, exclusive of transport animals. From September to November there were no less than 43 columns with an aggregate strength of 27,400 horses. Such was the work being carried on in only one of the three areas of warfare.

Commenting on the extraordinary inability of the British Forces to bring about a decisive action when the enemy was massed, or to prevent, almost under the eye of the columns, concentrations for the destruction of isolated detachments, the "Times History" * reviews the position of affairs which, though in the main a military criticism of the methods adopted, is so intimately connected with the wear and tear of horses, that we cannot do better than reproduce it.

"The operations described in this chapter may be said to mark the final failure of the standard British measures. To have proceeded on the same lines would have been to permit an indefinite extension of the war. The waste of energy had been enormous. If the reader will reckon up the troops and horses employed, and the distances covered by the columns in the north-eastern Free State during the last two months of 1901; if he will consider the fruits of their labours, which, if we except the deaths of Haasbrock and Olivier, and the burghers slain at Tweefontein, was represented only by driblets of killed, wounded and prisoners, and by damage to crops and stock; if he will then reflect that De Wet, having concentrated undisturbed in the midst of these movements, scarcely moved outside the small triangle, Lindley-Reitz-Tweefontein, thus husbanding his men, horses and ammunition; if the reader will make this comparison, he will understand how it was that British leaders and their troops, under the incessant strain of ineffectual marching, were liable to lose ardour and tackling power, while the supply of horses was never equal to the demand; and how it was that the Boers, in the forlorn condition of their country, retained the power to deliver such strokes as at Tafel Kop and Tweefontein."

The only part of this criticism that we would venture to expand is that dealing with the horses. The supply of horses *was* equal to the demand, but the supply of *conditioned* horses never was—and never could be under the system adopted of issuing them to columns the moment they had been imported. We have throughout this narrative quoted the captures of stock made by the various sweeping operations as far as they are recorded. It is not always easy to distinguish between horses and cattle, but it is known that many thousands of horses were brought in from the Free State operations alone during 1901. We have given evidence p. 160 of the proportion of these fit for military purposes, and it is true that very many were so employed. But was this source of supply fully utilized? Thousands of suitable animals had never been handled; it did not appear to occur to the authorities that unbroken horses require training, and the more mature they are the more difficult this becomes. Where was the staff to come from for this work? Rimington* and De Lisle trained unbroken horses with their columns, the latter placed them in the ranks at the rate of three or four ‖ a day. Besides being a first class horse master and enthusiast, he was fortunate in possessing a body of Australian horsemen in his column to whom the handling of unbroken and troublesome horses is a pastime. But all columns were not so favourably placed, nor, unfortunately, did all possess leaders with so keen an eye to possibilities and a knowledge of how to turn them to the best account as were to be found in Rimington and De Lisle. But apart from the local supply, who was to condition the imported horse? He certainly could not be made fit for work by remaining a month in a remount depot before issue, a restriction urged on Lord Kitchener from home.† He required to be ridden, and for this purpose the existing staff at Remount Depots was wholly insufficient and untrained. The only people who could have trained these horses for the field were the 11,000 cavalrymen employed by the various columns, and unless hostilities could be suspended for six or eight weeks so as to have allowed some thousands of horses to be made fit for work, it was impossible by any less drastic measures to have coped with the question of fit versus unfit animals.‡

CAPE COLONY.

September—October, 1901.

Modderfontein.

Smuts, whose early adventures have been alluded to at p. 173 crossed the Orange River on 4th Sept. in the vicinity of Aliwal North, and made south-east in the direction of Jamestown; with him was Fouché. He was pursued, but unsuccessfully. His entry into the Colony was part of a bold scheme for capturing Cape Town and Port Elizabeth, the latter being Smuts first objective, though

* Vol. v., p. 446.

* *R.C. Evid.*. *Q.* 12,606.

‖ I quote from memory, being unable to find the reference.

† Cd. 963. Cables 8th Jan., 21st Nov., 7th Dec.

‡ It may be suggested that Kaffirs could have conditioned the riding horses, but such a system would have taken a good deal of organisation. If the thing was to be done rapidly the Cavalry with the columns appears the best solution, especially as they possessed the saddlery, an important point which would have delayed any system worked by Kaffir labour.

circumstances compelled him to pass to the west. The chase of Smuts, whose journey began under such dramatic circumstances, is only of interest to us as enabling an idea to be formed of the nature of the work expected from the horses. It is necessary to indicate what he did and where he went if we are to appreciate the work demanded from the animals, and the distances covered by the twenty columns, with its 9300 horses, which endeavoured to arrest his progress.

Six columns were already within the area selected by him for invasion; these were so disposed as to keep him to the east, and deny the midland district which had only recently been swept, p.169. In spite of the collection of columns Smuts was able, after a twelve hours fight on 10th Sept., to wriggle between Monro and Doran in the dark, and then pushing on all night through heavy rain, did not halt until he had crossed the Eastern line in a south-westerly direction, and placed forty miles between his commando and that of the enemy. Four columns were told off in pursuit, and these were pushed on both by road and rail, in order to plant forces in his path in the direction in which it was anticipated he would take. One of the forces, consisting of a squadron of 17th Lancers 130 strong, was attacked by Smuts on 17th Sept. at *Modderfontein* on the Elands River, north of Takastad, and decimated. Half the horses of this squadron were captured, the other half were killed in action. The columns of Doran and Gorringe once more closed in, while Smuts travelled up and down the country in the space enclosed between the Eastern and Midland railway, the columns at his heels. Sometimes he was turned, and when almost hemmed in would find a line of escape between his pursuers. This he did on the 9th, and rapidly travelling south for the Winterberg Mountains found his passage barred. He came back going west in the direction of Cradock and ran into Scobell. He was then chased south, and being guided over the mountains in the dark saved his commando. It cost him 100 horses, but of these he had ample, owing to his captures at Modderfontein.

After crossing the Winterberg he rapidly made for Adelaide, was turned aside by local forces, and still pressing west crossed the Midland line. On 30th Sept. Gorringe, who was in hot pursuit, made contact in the Zuurberg Mountains north of Port Elizabeth, but not for long, for Smuts turned south in the direction of that city. French now threw more columns into the next line of rail west, which runs from Port Elizabeth to Graaf Reinet, so as to be able to stop further progress in that direction. Meanwhile Smuts turned north, being so harassed that he divided his Commando, one portion under Venter going towards Somerset East, while the main body crossed the Graaf Reinet line, in spite of the troops sent by rail to forestall him. Scobell on 8th Oct. now took up the pursuit, and for four days with barely any rest day or night he followed but could not overtake him. On 16th Smuts, still going west, in the direction of the main Cape Town line, met Scheeper's late Commando and the two travelled together; by this time Scobell had to go to the line for supplies, and Crabbe took up the chase. The general direction now taken by Smuts was south into the valley of the Olifants River; he then went west, Crabbe, who was still in pursuit, moved towards Oudtshoorn where he linked up with Kavanagh's column from Ladysmith, and during the last week in October endeavoured to surround Smuts. But the latter succeeded in working west, crossed the Cape Town line at Constable on 31st Oct., and made for Sutherland. He had succeeded, in spite of opposition, in reaching his objective after a remarkable chase of not less than 600 miles.

Venter, who broke away in the direction of Somerset East, was chased by B. Doran and Lukin; the latter had now taken over Gorringe's column. Venter's position on exhausted horses was desperate, but he boldly broke through a line of local troops between Somerset East and Pearston and took them prisoners. Thus remounted and re-equipped he proceeded north. The Midland and Graaf Reinet lines were used to hurry troops forward to cut him off, thereupon he doubled back and crossed the former line between Middelburg and Graaf Reinet. Nevertheless, Lukin overhauled him at New Bethesida, where the Commando was attacked with loss. It then broke away north-west, and was again found on 26th Oct. south of Richmond. Scobell at this moment was on the western line refitting; he was at once sent to Victoria West Road to cut him off, but Venter crossed the line and escaped to the west. Before he crossed two commandants left him to go south. These were Malan and Hugo, the latter the Free State judge; both were dangerous and determined leaders. B. Doran followed them in the direction of Willowmore. The pair had previously been joined by an equally dangerous man Latigan, whose Commando we saw, at p.169, had been dispersed by Lukin on 21st July. B. Doran located his enemy forty miles west of Willowmore where he attacked them. Doran was wounded and his horse killed. His place was taken by his brother W. Doran, who chased the trio north-west, but they all crossed the railway above Fraserburg Road station on 13th Nov., and went out into the west towards Sutherland.

When Theron went south after appearing at Prince Albert on 2nd Sept. (p.170), he made for Oudtshoorn, Kavanagh from Willowmore moved in that direction. Theron then made for Mossel Bay, and when within a few miles of this port Kavanagh caught him and drove him west across the Gouritz River. Here Theron lost over fifty horses and several men. Still keeping west and well ahead of Kavanagh he attacked Heidelberg near Riversdale on 13th, the garrison of which kept him employed until Kavanagh came up, when he made off north-west for Barrydale. When Kavanagh reached this place on 17th, the chase was temporarily dropped as he had to go into Swellendam for supplies.

It is noteworthy that at Barrydale Theron was only 130 miles from Cape Town. It is fortunate Kavanagh prevented him from reaching the sea at Mossel Bay, as the moral effect of this would have been very great. After Kavanagh fell out, Alexander and then Wyndham endeavoured to intercept Theron, but he crossed the Cape Town line at Touws River on 22nd Sept., and went westward into the Sutherland district.

Scheepers remains to be dealt with. It will be remembered that he repulsed Alexander on 19th August at Uniondale, p.170. From here he went west, his head being turned towards Cape Town. Making for Ladysmith on 23rd August he was twice caught up but forged ahead, and caused much anxiety by making for Swellendam, with its large collection of stores, or even for Worcester where thousands of remounts existed. By 9th September Scheepers was headed from the Cape Town line and divided his Commando; part under him made for Swellendam with Atherton in pursuit, the other, under a boy Commandant, Van der Merve, went north, and almost immediately encountered Crabbe from Laingsburg; Crabbe destroyed the Commando, including its Commandant, on 10th. Crabbe was now able to join Atherton in chasing Scheepers. The latter arrived at Ladysmith on 12th, and while Atherton operated around Oudtshoorn to prevent a break away north, Crabbe kept Scheepers in the difficult country on both banks of the Olifants River, where for days he twisted and turned in order to avoid not only Crabbe and Atherton, but also Alexander, Wyndham and Kavanagh, who by this time were available to act against Scheepers in consequence of the escape of Theron. Scheepers, working north-west, "strove like an imprisoned panther to break through the cage of troops and precipices which held him in." * On 5th October Atherton was able to push him towards Kavanagh, who robbed him of sixteen men and forty horses; still running north from Matjesfontein he lost 150 more horses, and on 8th sixty more. By the time he reached the Wittebergen Mountains, south of Matjesfontein, he had only fifty or sixty mounted men left. By now Wyndham, Kavanagh and Atherton had dropped out, and only Crabbe and Alexander remained. Alexander followed him across the line, Crabbe took train for Beaufort West, with the intention of coming on him from the north, but Scheepers course was run. Sick with fever he was captured in his bed on 11th Oct. His Commando being led by Pypers, who subsequently joined Smuts. †

* "Official History," Vol. iv., p. 284.

† Scheepers being a rebel was shot four months later. He was described by one who fell into his hands * as a young and superior man, who wore a semi-military uniform. His men were distinguished by wearing yellow puggaries. It is interesting to learn the actual life led by these men on Commando, and the methods they followed which enabled them to evade pursuit. An account of this is given in the "Rhodesia and After," S. H. Gilbert, 61st Squad. I.Y., 1901.

WESTERN TRANSVAAL.

SEPTEMBER—OCTOBER, 1901.

MOEDWIL, KLEINFONTEIN.

The events recorded in the last section had helped to deplete the Western Transvaal of troops; G. Hamilton, Allenby and Garratt were now in the Eastern Transvaal; Methuen was refitting at Mafeking after the affair on the Marico River, p.168; Featherstonhaugh's columns, led by J. Williams and Hickie, were doing the same at Ventersdorp after two ineffectual attempts on Kemp. Kekewich had now taken over command of the force in the entrenched camp of Naauwpoort, lying south of Olifants Nek, and on 13th Sept. with a force of 560 mounted men, consisting of the 1st Scottish Horse, 7th Batt. I.Y., Infantry and guns, he moved along the northern slopes of the Magaliesberg, engaged in the never-ending work of clearing the country. After some days he passed through Magato's Nek, and was now in the difficult and ever-dangerous Zwartruggens. When seven miles east of the pass he encamped on the Selous River at *Moedwil*. Nothing had been seen of the enemy, and though this was the haunt of De la Rey, he was believed to be away.

The camp of Kekewich was attacked before dawn on 30th Sept. by 1500 men under De la Rey and Kemp, who had followed the Column for a week until, presumably, its position was suitable for their operations. Considering the circumstances and that many irregular troops were receiving their baptism of fire, there was very little confusion at the moment of attack, in spite of the fact that "mobs of terrified horses and mules stampeded wildly through the camp. * The fire was very heavy. "Horses and mules went down in hundreds, and a number stampeded in the direction of Megato Nek. † Very soon after daylight Kekewich was

above quoted work by one who spent eleven days as a prisoner with Scheepers. Their camp at this time was at a farmhouse in the Camdeboo Mountains, situated in a ravine at the foot of almost precipitous masses of rock. The Commando was made up of old and young, some being boys of fifteen. In the evening they sang hymns; it may be remarked that these performances are not inspiring. It is the old Puritan drawl, the notes being prolonged in such a way as to render identification of the air almost impossible. When the Commando broke camp the men assembled, and bare-headed sang the Transvaal National Hymn. This was always done unless pressed by the enemy. The following gives a very clear account of how a Commando moved in a difficult country:—"They had no transport, and dismounting they tied their horses in long strings head to tail, with an old stager in front. The animals then clambered up the almost perpendicular rocks by a dizzy track, which the Englishman would have thought twice about attempting on foot. The Boers clambered after them, sometimes having to use their hands as well as their feet, and so the summit was reached." When the men had no food they lived on the leaves of the "Spek-boom" tree, which furnishes fleshy leaves tasting like sorrel. It is little wonder that an enemy so resourceful and self-contained could move about a friendly country with relative impunity.

* "Times History," Vol. v., p. 381.

† Idem.

able to do more than hold his own, he made a counter attack, and so threatened the left flank of the enemy that they shortly retired. The losses were 192 men, while 512 horses and mules were killed. It was impossible for Kekewich to pursue as "there was scarcely one unmounted horse in camp.*

Featherstonhaugh had been advancing north with his Columns from Ventersdorp, and being 25 miles south could hear the firing at Moedwil. The Columns under him searched for De la Rey, but he was invisible. Meanwhile, Kekewich proceeded to Rustenberg to refit. In twenty-four hours after Moedwil he had received 320 horses and 200 mules,† and on the 13th Oct. was marching west with a new force in search of his late antagonist in conjunction with Methuen, who was advancing from Mafeking *via* Zeerust to meet him. The two Forces met and saw nothing of the enemy. Each therefore turned about and retraced its steps.

Methuen's way back led through the heart of De la Rey's reserves. It was known to be a most difficult and dangerous road, and especially prone to attack. The force was in two columns twelve miles apart. On the 24th October, the southern column was ambushed at *Kleinfontein* by a party of 600 men concealed in a belt of timber. With this southern column were 680 mounted troops of the 5th I.Y., guns and Infantry under Von Donop, together with a train of 100 ox and mule waggons. The Force being engaged in front, the 600 men in hiding then rode out of the wood in three divisions "like a regiment of European Cavalry,"‡ and cut the long train into three portions. While some attempted to divert the waggons by shooting the unwilling drivers, others made for the guns with the rear guard where a struggle occurred. The waggons in the rear were now being driven off by the enemy, twenty had been overturned, and dense bush prevented the passage of others, but the guns with the convoy and the efforts of the Imperial Yeomanry had turned the tide, and in half-an-hour the affair was over. It cost 84 men, half the Yeomanry horses, two gun teams, and 12 waggons; 49 native drivers were killed, wounded, or missing. The reprisals on these unarmed men was a feature of ferocity which amounted to wanton murder. We shall see later in this history how the unarmed Indian establishment of a Field Veterinary Hospital fared at the hands of the same men. On 28th October Methuen reached Zeerust.

Kekewich was able, towards the end of October, to slightly repay part of his debt by rushing a laager reported some distance north-east of Rustenburg. On 29th October, after a 25-mile night march, he accomplished his mission with very little loss, and was back at Rustenburg on 2nd November.

* "Times History," Vol. v., p. 381.

† "Official History," Vol. iv., p. 298. This is a good record of Remount supply.

‡ "Official History," Vol. iv., p. 299.

NORTHERN TRANSVAAL.

SEPTEMBER, 1901—MAY, 1902.

When we last saw the Northern Transvaal it was in connection with Plumer's, and subsequently Grenfell's operations (pp. 165-167).

For several months Grenfell remained in the Northern Transvaal, surrounded by elusive enemies, to whom he gave no rest. Ably supported by Colenbrander, who knew the country and could play the enemy at his own game, Beyers and his Commandants had little rest. The enemy rarely took the initiative but had to be sought out; consequently the amount of marching done by this Force during the thirteen months it operated around Pietersburg was extraordinary, especially bearing in mind the inhospitable and unhealthy nature of the bush veldt. We can only glance at one or two of the most important operations, in order to give some notion of the amount of work demanded from animals in a district notoriously unhealthy, and which for some months in the year is fatal to all horses exposed to it.

The horse difficulty in the Northern Transvaal affected the enemy nearly as much as ourselves, and he found it necessary to conserve his Forces.

July and August were train-wrecking months, in which severe damage and loss of life was inflicted by the enemy. In September, Grenfell handed over command to Colenbrander, who, on 6th October, actually marched right across the north-western part of the country, through a most desolate and inhospitable area, until he struck the Mafeking-Buluwayo Railway. The privations encountered were considerable, 40 hours without water was not unknown; he returned through the same region, choosing a worse part of the country further north. He was not back at Warm Baths until 19th Nov., having just broken up a Commando after a 40-mile chase. Dawkins from the Free State had reached Nylstroom before he started, and while Colenbrander was away he worked down the Eastern side of the line effecting captures. On 23rd Nov., Colenbrander with Dawkins captured Badenhorst and his Commando after several days pursuit and fighting, and, but for the weather, would have secured Beyers who was chased 30 miles. On 13th Dec., the same combination went south-west and brought in more prisoners, but further operations in the bush veldt were now impossible owing to horse-sickness and malaria. Dawkins returned to the Free State on 27th Dec., and Colenbrander to Rustenburg. In his absence, Beyers attacked Pietersburg on 24th January, 1902, and got into the town, but was driven off after a hot fire. One object of this attack was to obtain horses from the Remount Depot and Veterinary hospital. C.V.S. R. Anderson, who was in charge of the hospital, was taken prisoner, but released after a few days. Throughout February Beyers was immobile through horse-sickness, so settled down in the almost inaccessible hills east of Pietersburg.

In March, 1902, he moved north, and attacked a post, Fort Edward, just south of Louis Trichard, and cut it off. Colenbrander was sent up from Krugersdorp to Pietersburg; on arrival he at once marched the 50 miles to Fort Edward, and inflicting severe loss on Beyers relieved the post. Beyers retired to his mountain fastness east of Pietersburg, and in April Colenbrander was strong enough to attempt to deal with him in this difficult position. The remaining period of the war consisted of operations, generally successful, in breaking up this Commando, but peace was proclaimed before Beyers was captured. The work done during the two months of April and May was most exacting and arduous. In the above operations the veterinary officers engaged were C. V. Surgeons W. C. Lowe (now Captain A.V.C.), and G. W. Lee (now Agricultural Dept., S. Africa), both of whom held Commissions as Captains in Kitchener's Fighting Scouts.

CAPE COLONY.

Attack on Cape Town.

October to December, 1901.

It was in October that Maritz's scheme to attack Cape Town took definite shape; coming south by Clanwilliam in the first week of the month he held the garrison of Piquetberg confined to their position, and pushing on south crossed the great Berg River and made for Cape Town. On 11th Oct. he was at Hopefield, only *sixty miles* due north of Cape Town.* French, who was on the spot, placed the three columns of Wyndham, Capper and Wormald (a new column) obliquely across his path, and Maritz, having made an attack on a squadron of the 16th Lancers, retired north under the pressure of the above columns. These followed him up between the sea and the mountains, and reached Clanwilliam, 80 miles north, on 24th Oct., by which time Maritz had safely retreated to one of his mountain fastnesses west of Van Rhyn's Dorp, 70 miles north of Clanwilliam. Wyndham then went on convoy duty to Calvinia, and Wormald and Capper continued to press north to the Olifant's River. But Maritz having now been joined by Theron took the opportunity of the coast being clear to make once more for Cape Town by the road out of which he had just been forced. On 31st Oct. he was again at Clanwilliam, where he captured and burned a convoy, and moved south. Wormald made a hurried return, doing 65 miles in seventeen hours over the sandy wastes of this low-lying country. Joined by Capper they continued their march south. Wyndham marched from Calvinia to Clanwilliam, 80 miles. On 3rd Nov. Maritz was once more on the Great Berg River. To interpose between him and Cape Town Kavanagh was brought on 5th Nov. to Moorreesburg Crabbe arrived in the vicinity on 10th Nov., and in the interval between those two dates Maritz might have reached the Capital. He, however, required horses, arms and ammunition for his rebel recruits, so in order to obtain these he sent Theron against the town of Piquetberg; the garrison drove him off after twent-four hours fighting. On 9th Nov., Maritz, with his new lieutenant Theron, crossed the river making south, and on the 10th the former reached Darling. Matters were now most critical, but on this day Crabbe's column detrained at Piquetberg Road Station, and marched south-west for Malmesbury 20 miles away. Here it again entrained, and on the following morning was south of Mamre. The latter place had already been touched by the patrols of Maritz; it is situated only *30 miles* from Cape Town. Crabbe's position enabled him to close the road to the capital to Maritz, who drew back, was followed north, and driven across the great Berg River on 14th. Kavanagh meanwhile having found Theron, chased him, and Crabbe leaving the further pursuit of Maritz to the columns of Capper and Wormald, now on the great Berg River from Clanwilliam, turned on Theron who was now actually behind him. Theron had his back to the sea, in front of him were Crabbe and Kavanagh, behind them the great Berg River, and at the mouth of that river lay a gun-boat. A gun-boat to deal with a Commando! Theron galloped past both columns, crossed the river 45 miles away from the gun-boat, and escaped north-east.

These operations led to a good deal of marching up and down and across the track lying between the sea and the mountains to the north of the Capital. The attempt on Cape Town produced a heavy draught on the horses, but was of more interest for its surpassing boldness and the immunity Commandos felt even when actually in the lion's jaws. This immunity was due among other causes to their greater mobility; they could always show a clean pair of heels. Our horses still carried too much weight.

After the retirement of Maritz and Theron, Crabbe marched to Lamberts Bay, Kavanagh to Clanwilliam, Wormald to Ceres, Capper remained at Piquetberg. Maritz disappeared until 28th Nov., when he unsuccessfully attacked a small post on the Brak River, 50 miles north-east of Calvinia, in quest of arms, ammunition and remounts. The place was invested for eight days and drew W. Doran and Callwell to its relief from Sutherland 100 miles away.

In consequence of the attempt to enter Cape Town, one of the most remarkable undertakings in block-house lines was now put in hand. It was no less than running a wire fence nearly half way across a sub-continent, *i.e.*, from Lamberts Bay to Victoria West, through practically a desert. The distance was 320 miles, and the work was undertaken from

* Matters at this time were very serious, and marshal law was proclaimed in the Capital.

The "Times History" Vol. v., p. 541, estimates that at the beginning of November, 1901, there were not more than 1500 men in the field in Cape Colony belonging to the enemy, of whom six-sevenths were rebels. Yet, in order to deal with this handful there were at this time sixteen mobile columns employing 8000 horses, and many thousands of other troops in fixed positions.

both ends early in the month of December. Wormald went to Victoria Road to cover the working party at that end, Crabbe and Wyndham remained at the Lamberts Bay end. These two columns when protecting a convoy to Calvinia on 20th Dec. were sharply attacked, and again on 22nd and 23rd. Smuts, who was now in command of all the forces in Cape Colony, was present and directed the attack which was of the most determined character. The heaviest casualties occurred in the 16th Lancers, but the number of animals lost is unknown.

When Kritzinger re-crossed the Orange River in the middle of August, as narrated at p. 169, he proceeded to the Zastron district where he remained resting for four months, surrounded by columns which were gyrating in the neighbourhood, though they never discovered him. During his absence from Cape Colony matters in the midland districts had not flourished, and Smuts urged him to return. The crossing of a river patrolled by columns was evidently a matter of ease to Kritzinger, who, selecting the historic Sand Drift used by De Wet, crossed with 100 men on 14th Dec. He was at once chased by the columns of B. Doran and Bentinck. Kritzinger's men had two or three horses apiece, and there ensued a long and a stern chase south in the direction of the block-housed line running from De Aar to Naauwpoort. On the 16th, at night, this was rushed after cutting the wires, but Kritzinger was wounded and captured together with other prisoners and 80 horses. The main body got through, and making for Hanover and Richmond, under the command of L. Wessels, got safely into the Camdeboo Mountains.

In November, while the stirring events already recorded were occurring close to Cape Town, a further attempt was made to deal with Fouché, in the almost inaccessible regions in the Drakensberg to which he fled when in difficulties. Scobell chased Fouché, Monro dealt with Myburg and Wessels, and their operations were successful in producing attrition, they captured 500 horses belonging to these Commandos, though the bodies remained at large. Myburgh was, however, too hard hit to take the field again. By the end of December the above columns, including a new Colonial Division of Cape Mounted Riflemen under Lukin, had driven these bands from pillar to post, though not across the Orange River.

WESTERN TRANSVAAL.

NOVEMBER, 1901, TO JANUARY, 1902.

During this period, the enemy did not offer any considerable oppositon. De la Rey was not in evidence, and the operations mainly resolved themselves into minor drives and raids by Methuen and Kekewich in the Klerksdorp area, assisted by a column under Hickie. The quantity of stock captured during this time continued to furnish evidence of the resources of the enemy, and the difficulties in clearing a country which had been traversed over and over again by British columns.

Both Methuen and Kekewich came from the north for these operations, where we last saw them between the Magaliesberg and Zeerust; on 18th November they were at Klerksdorp, having, of course, had to deal with opposition on the way. A few days before this time Hickie, when a short distance north of Klerksdorp, had suffered a serious loss in a reconnoitring squadron of Imperial Yeomanry, resulting in many casualties and the loss of over eighty horses. On 26th November, Methuen, Kekewich and Hickie moved out west from Klerksdorp, their transport was ambuscaded on the following day and seventy-seven horses lost. Methuen operating by night, continued his journey west, and then turning south-west was back in Klerksdorp, after several encounters; on 4th December he returned with prisoners, 14,000 head of stock, 200 draught animals and supplies.

On 11th December, after a week's rest, both Methuen and Kekewich again went west to the Makwasie Berg, a range of hills north-east of Wolmaranstad, which they searched and raided. After a considerable amount of successful marching and counter-marching they were back in Klerksdorp on 20th with prisoners, 36,000 head of stock, 480 draught animals, and immense supplies of grain, The grain brought in by all raiding columns was only a fraction of that discovered. The tons of food stuffs destroyed were incalculable.

On 28th December both columns again went west from Klerksdorp, once more in the direction of Wolmaranstad, Kekewich blocking the north, while Methuen harried the Makwasie Berg hills from the south. Methuen now hurried west after a Commando, which he subsequently missed, and reached Vryburg on 6th January; Kekewich, losing touch with him, went north, and after a good deal of marching arrived at Ventersdorp on 9th January with 7000 head of stock.

Other operations in the Western Transvaal in December were those prosecuted by Cunningham and Dalzell around the drifts on both sides of the Vaal in the vicinity of Lindeque, Rensburg's Drift, Witbanks, and other places.

On 8th January, Methuen again left Vryburg, and on 14th captured a small convoy in the vicinity of Harts River; another fell to him on 16th, in which his mounted forces rode fifty horses to death, and on 19th he entered Lichtenburg. On 21st he lost seventy-four horses out of a force of 200 sent to capture a supposed small party of the enemy which turned out to be a strong Commando. Methuen remained at Lichtenburg until 26th January when he started for Klerksdorp, where he arrived on 1st February. Kekewich, who had been busy raiding the district and protecting the blockhouse line in January, now on the completion of his section, again took more active measures. On 5th February he had a great success at *Gruisfontein*, a few miles east of Lichtenburg, where he surprised a laager, capturing 131 of the enemy and only losing 28

horses killed, though the range was but a matter of a few yards. On February 21st he returned to Klerkdorp.

EASTERN TRANSVAAL.

Bruce-Hamilton's Raids.

November, 1901, to February, 1902.

Since last dealing with this theatre of war, important changes had taken place in the physical conditions, to which allusion must be made if the columns' movements are to be understood. The blockhouse lines had been introduced into the interior of the high veldt of the Eastern Transvaal, and had carved it up into areas which more readily lent themselves to treatment. The large protected area, extending from 40 miles east of Pretoria, north and south, to 30 miles east of Heidelberg, was still held by a line of Constabulary posts; Ermelo, in the middle of the high veldt, was connected with Standerton on the south by a blockhouse line, and on the north with Carolina, while the latter was linked up with the Delagoa line at Wonderfontein, a little west of Belfast. The Eastern Transvaal was thus cut in halves by a line of rifle fire over 100 miles in length, and in the middle of this desolate waste, in the very heart of the Eastern Transvaal, a supply depot was established at Ermelo, furnished by convoys which could now travel in safety by the blockhouse line from Standerton to Ermelo. This base in the enemy's country enormously facilitated the work of the columns, for, unwieldly transport could be left behind and columns thereby rendered more mobile, while the distance they had to fall back for food was relatively small. All this has a far greater bearing on the question of horse wastage than might at first sight appear. The shorter the time the troops are from their base the less the horse has to carry. The moment the weight on the back is reduced, the greater the available energy for military purposes. The blockhouse line never perhaps came up to strategical expectations. The enemy regarded it with contempt excepting when he had to cross it, but as a means of carrying war into the interior away from railways, with a minimum of animal labour and a maximum of safety for transport animals, it was superb. None of the work to be related in the present section would have been possible but for the existence of a supply depot on the spot. It only remains to be noticed that another blockhouse line ran from Volksrust in Natal, *via* Wakkerstroom and Piet Retief to the border of Swaziland, a distance of 60 miles, and thus cut off the bottom pocket of the South-Eastern Transvaal from the high veldt. This line also enabled the columns based on it to keep the Field.

The events immediately succeeding Bakenlaagte have already been referred to at p. 173. By the middle of November twelve columns with 15,000 horses had been collected to avenge the disaster. Four of these were directly under Bruce Hamilton, eight others were to co-operate with him as required. Hamilton disposed eight columns along the Wilge River line of Constabulary posts east of Pretoria-Heidelberg. Two hundred miles south-east were Rawlinson's Column at Volksrust, Colville's at Piet Retief, and between these two Plumer at Wakkerstroom. Botha was eighteen miles north of Bethel. The scheme was for Bruce Hamilton to drive the Eastern Transvaal with his column from west to east,and force the retreating burghers against the Swaziland border into the arms of the three columns above referred to as extending to Piet Retief.

The movement began on 16th November, and under cover of it the Constabulary posts were advanced fifteen miles further east, the line of columns advanced on Bethel, and finally on Ermelo, where Hamilton endeavoured to swing his long arms around the enemy, and make them either retire still further east or fight. The columns converged on Ermelo on 3rd December, and on the same day Botha's forces broke back between them, one body going north-west, the other south-west. Consequently, the drive, like so many of its predecessors, was barren. P. Viljoen was in command of the party which broke back north-west, and passed between the columns of Williams and Allenby. Botha guided the south-west party between the columns of Spens and Campbell, and on 3rd December was lying between Bethel and Ermelo, where he was raided at dawn on 4th by Hamilton, and heavy captures effected. Botha, with the bulk of his forces, went south-east, and found himself against Pulteney 750 strong, and Plumer 1000 strong, who had advanced north from Wakkerstroom, but nothing was effected.

On 9th December Hamilton again raided. A thirty-mile march at night brought him to a laager, which he captured; those who escaped were secured after a six-mile gallop; twenty miles back to camp completed a hard day's work. On the 12th the same troops made another successful night raid and covered fifty miles before their return to Ermelo. These are but a few of the night raids during this most productive campaign, and show the improvement which had resulted in the condition of the horses in consequence of food and care. The distances are given in the "Official History,* and are, therefore, reliable.

On the 7th December Botha, undeterred by failure, was actually about twenty miles south of Ermelo; Spens was watching the blockhouse line, Standerton-Ermelo, but a short distance away, and on 18th December sent out a force of 200 M.I. to search a farm close to Botha's headquarters. The party was surrounded and lost 130 horses and a sixth of the men. The force under P. Viljoen which escaped north-west had been twice raided at dawn, on 10th and 13th December, by three columns with excellent results. He then put 200 men across the Constabulary line, who entered the "protected" area east of Pretoria and joined Prinsloo, where they remained until the end of the war. Mean-

* Vol. iv., p. 375.

while, P. Viljoen himself with 300 more men entered the same area towards the end of January, 1902.

Bruce Hamilton continued to march east, and causing the north and south to be blocked, devoted the remainder of the month to night raids, which grew less successful as the enemy became more skilful in dealing with them. At the end of December Botha was still not more than twenty-five miles south-west of Ermelo, while Bruce Hamilton was against the Swazi border. An attempt was therefore made to get between Ermelo and Botha and drive him east towards Bruce Hamilton, Spens, Plumer and Pulteney doing the driving. The movement began on 1st January. On 2nd an advance guard of one of Plumer's Columns was captured; on 3rd December a serious reverse occurred also to one of his advanced patrols, in which the 5th Queensland Imperial Bushmen, 19th Co. I.Y., and two Companies of Regular M.I. were successfully ambushed, and lost heavily in men and all their horses. For three weeks longer Hamilton night-raided from Ermelo, and finally towards the end of January his columns repeated the drive on the Swazi frontier, but the results were small.

Botha, however, with 600 men left the Eastern Transvaal on 15th February for good, and, retiring south-east into the Vryheid district, never again appeared. The blockhouse line south was not tested, as he went round it through Swaziland.

NORTH-EAST TRANVAAL.

AUGUST, 1901, TO JANUARY, 1902.

A period of quiescence followed Blood's operations recorded at p. 167; most of the columns taking part in it had by now gone elsewhere, but Blood remained operating to the north of the Delagoa line. A combination of columns, Park, Campbell, and Kitchener, one being a flying column of Cavalry and M.I., made an attack on Muller near Elands River on 16th August, in which a party of the 19th Hussars were ambushed and lost all their horses. Then followed operations around Roos-Senekal and Dullstroom, which yielded little.

From September to December matters were very quiet. B. Viljoen and Muller were both present, but there was ample evidence to show the impossibility of ousting them from their mountain fastnesses; in consequence the people north of Lydenburg enjoyed immunity from British Columns and lived in comfort, for food was plentiful. This area, however, in December became the seat of the Transvaal Government, which broke through from the Eastern Transvaal when Bruce Hamilton began his operations in November. At the time there was only one British Column in this part of the country; it was situated at Lydenburg under Park, another was now sent from Belfast under Urmston to join with Park in tracking the fugitive Government. On 18th December this Column attacked Muller, who was escorting the party, and there were many casualties, but the Government escaped. B. Viljoen, however, on returning from a visit to the Government was ambuscaded and captured on 25th January. A third column under J. Williams operated with the other two in February, and made a raid on Muller who was still covering the Government, and though many captures were made the governing body escaped and for safety proceeded further north.

With the above operations the military events for 1901 may be considered to have closed. The tedious details of movements we have narrated have been essential to a clear understanding of the question of wear and tear, which must now be taken up.

THE HORSE QUESTION IN 1901.

STATISTICAL.

Prior to our consideration of the operations of 1901, it was pointed out as an essential to a clear understanding of the wastage occurring in that year, that the war was waged by a force entirely mounted. While clearly pointing out that the excessive wear and tear was not materially due to any shortage of supply, as urged by the "Times History" (p. 147), opportunity was taken to insist that a powerful contributory cause to wastage—apart from want of condition of remounts—was the introduction into the country of 5800 new M.I., 17,600 new Yeomanry, and 6000 new Colonial contingents, to say nothing of the thousands of men raised locally, the exact numbers of whom are unknown. All these were more or less inexperienced in the care and management of horses, and none, excepting those locally raised, had a knowledge of their management on a campaign.

This must be borne in mind in considering the percentage of loss which had been anticipated by the War Office. We have seen, p. 142, that some years before the war occurred, it had been laid down that the wastage on a campaign would be five per cent per month.* This was far too low, and in the face of the new data available † should have been revised, On the official basis of 5% per month, the number of remounts required monthly for a mounted force of 60,000 men would have been 3000. To what extent this was exceeded is shown in the following table ‡ of remounts supplied by Major-General Truman during 1901, and does not include the horses brought to the country by Colonial Contingents and Regular re-inforcements.

* R.C. Evidence of General Sir Mansfield Clarke, Vol. ii., p. 39.

† "The Loss of Horses in War," see footnote p. 142.

‡ "Court of Enquiry Remounts," Appendix B, p. 311.

NUMBER OF REMOUNT HORSES AND MULES SUPPLIED DURING 1901.

	Horses	Mules	Horses Quarterly	Mules Quarterly
January	8439			
February	6973	2467		
March	9742	2000	25118	4467
April	8067	3098		
May	6684	2399		
June	8717	474	23468	5971
July	11442	3650		
August	9817	998		
September	9596	2852	30855	7500
October	12070	2078		
November	11000	2020		
December	17295	1015	40365	5113
			119,806	23,051
Deduct losses at Sea, 3·63% horses 1·56% mules			4348	359
		Total	115,458	22,692
Add Remounts on the Sea in Dec., 1900 (less loss), and not included in that year			5800	2950
			121,258	25,642
Deduct Remounts on the Sea in Dec., 1901, not received 31st Dec. - -			10,000	1000
Total Remounts from oversea received during 1901 -			111,258	24,642

The above total only refers to Remounts, and does not include the fresh horses coming into the country with re-inforcements as follows :—

Six Cavalry Regiments	3300 horses
Colonial Contingents	6300
Total, after deducting loss at sea	9250

So that, speaking in round numbers, the total number of horses accompanying units, together with Remount horses and mules from oversea, during 1901, is as follows :—

120,500 horses 24,600 mules

Even these gigantic figures do not exhibit the full total. There were purchased in South Africa during 1901* 92,699 horses and 16,245 mules. Adding these to the imported animals we obtain

	Horses	Mules
Total number of new horses and mules obtained from all sources during 1901	213,200	40,845

Incredible as this total seems, it actually does not represent the total number of horses available, for it takes no notice of the tens of thousands of captured animals, very large numbers of which were used by the troops, if only for a day or two, but of which no record can ever be obtained.† A guess might be made as to the number so employed. For instance, at p. 160, Major Mann reported 20% were available in the sweeping operations of Elliot's columns, and there is reason to think this estimate was lower than was subsequently obtained. In the absence, however, of reliable data we are compelled to pass over the thousands of horses "picked up" on the veldt, and confine ourselves to the figures above given.

The loss incurred by this immense number of animals, on the basis explained at p. 141, is as follows for the year 1901:—

Horses **142,603** Mules **14,433**

Again, it must be remembered that this was the dead loss only, and does not include the wastage arising from sickness and injury. Nor does it refer to any other animals than those paid for out of the public purse.

We cannot statistically compare the above loss with that occurring during 1900, for it has not been found possible to separate the three months of 1899 from the twelve of 1900 (see p. 142). But for the sake of comparison we may place the tables side by side.

	Dead loss in 15 months, Oct., 1899—Dec., 1900.	Dead loss in 12 months, Jan.—Dec., 1901.
Horses	110,028	142,603
Mules	29,113	14,433

There is an increase of 32,500 horses lost during 1901 as compared with the previous fifteen months of the war, while a decrease in deaths of 14,700 mules occurred during 1901, as compared with the earlier period. This decrease may in part be due to the blockhouse lines; on the other hand it may be more apparent than real, for in round numbers only half the number of mules were supplied in 1901 as compared with the period Oct., 1899—Dec., 1900.

Perhaps a better way of visualising the loss is to calculate the *deaths* on a daily basis. For the

* R.C. Appendix 38a, p. 260. It will be remembered, pp. 123, 132, that in 1899 it was reported that local supply in South Africa was unobtainable. In the two years and three months of the War which this history at present covers, no less than 146,918 horses and 16,245 mules were obtained as Remounts in South Africa!

† Some idea of the numbers of captured stock may be gained from the fact that the columns which desolated the north-east of the Free State sent into Harrismith alone no less than 58,000 horses, nearly half of which were breeding stock. In these numbers everything was counted but foals Harrismith was only one of several receiving centres, and the north-east of the Free State was a fraction, though the richest in horses, of the total area which had to be devastated in the Free State and Transvaal.

fifteen months, October, 1899 to December, 1900, these averaged:—

Horses	263	per diem.
Mules	63	„ „

For the twelve months January—December, 1901, they averaged:—

Horses	387	per diem.
Mules	40 (nearly)	„ „

The monthly total wastage varied very little: at the end of the year 1900, it was reported as 25%.* In April, 1900, it was still 25%.† On 1st March, 1902, the Q.M.G., in his evidence before the *C. of E. Rem.*, *Q.* 18, stated that the deaths and destructions in veterinary hospitals amounted to 1000 a week, and that this number did not include the mortality with columns [remount depots and farms]. We now know that these three sources produced an additional 1700 deaths a week.

The Q.M.G. added that there were approximately 20,000 horses on the sick list, but these numbers did not include the thousands recuperating on farms.‡

The dead loss of horses being 5·58% per month, and the general rate of wastage 25% per month, leaves 19·42% to represent the sick and debilitated. The sick, debilitated and weary therefore amounted to 41,400 horses a month, of which 20,000 or more went to hospital, and 21,000 or less to debility farms, or back to Remount Depots.

Briefly re-stating all the previous facts, and expressing them in round numbers, and in terms which readily appeal to the imagination, the mean loss in horses and mules every month during the year 1901 was as follows:—

		Monthly
Deaths and Destructions	Horses	**11,600**
„ „	Mules	**1200**
Sick, debilitated and weary		**41,400**
Total Wastage		**54,200**

This is a truly appalling loss, the like of which had never previously occurred in an army subsequently victorious. We must now in general terms endeavour to trace its cause, and observe its subsequent effect upon the veterinary service. Before doing so, it will be convenient, at the risk of some little reiteration, to look at those losses on a large scale which have been recorded during the operations of the year under review; also those of certain individual units not previously specified in the text.

* Col. 963, Cable 73.

† *C. of E. Rem. Appendix F*, p. 368.

‡ **As a matter of fact the number of sick in hospital was frequently higher than the estimate made by the Q.M.G. In September and October, 1901, they stood in round numbers as follows:—**

Week ending	**25th Sept.,**	**remaining in Hospital,**	**26,500**
„	**2nd Oct.,**	„	**26,000**
„	**9th „**	„	**27,000**
„	**17th „**	„	**26,000**
„	**24th „**	„	**27,900**

CAUSES OF WASTAGE.

Examples of the excessive wear and tear of horses during the year 1901 are recorded in some of the Papers presented to Parliament. In Cd. 963, Cable 79, it is stated under date of 21st March, 1901, that the number of horses issued during the month of January to the troops operating in Cape Colony was no less than 12,000. The same Cable also informs us that the loss in horses of the various Columns in repelling in February the invasion of De Wet amounted to 5000.

French's operations in the Eastern Transvaal had used up 2,000 horses by the middle of March. We know that many of these died from horse sickness, and the Cable informs us that during the month of February alone, the loss in the Transvaal, mainly from this disease, exceeded 3000 horses!

In April, 1901, the officer in charge of Remounts, South Africa, informed the War Office that the wastage on the 55,000 mounted troops then in the Field equalled 25%. *C. of E. Rem.*, Appendix F, p. 368.

The Quartermaster-General, in his evidence before the *C. of E. Rem.*, gave an example of horse wastage in a regiment of Mounted Infantry. The original strength of the regiment was 492; in five months it received 556 fresh horses, so that the loss was over 100% in that short time. The strength of the regiment on the 19th September, 1901, was 391, and the following shows the effective state of the horses.

Fit, 13; fit in ten davs, 30=43.

Unfit, 34; in hospital, 208 (sore backs and mange); destroyed, 106=348.

Out of 391 horses only 43 could be classed as fit, and this was the balance remaining of a total number of 1048 received during five months!

A witness before the *C. of E. Rem.*. *Q.* 6443, stated that on 12th May, 1901, the Metropolitan Mounted Rifles received 610 horses. They started on their march to Orange River, 80 miles away, and by the time they got there most of the men were dismounted. The witness did not tell the Court that these men, many of whom could not even put on a saddle or bridle, were mounted principally on half-broken, semi-wild horses, that had just been handled and backed, and but little more. Before the regiment completed its first march of 14 miles, the whole of their spare horses were loose, men by scores were marching on foot, while the track over which the regiment passed was littered with accoutrements of every description, including field glasses and rifles.

The previous witness, *Q.* 6445, said that two companies of Yeomanry, which were only performing outpost and convoy duty around De Aar, received 600 horses in two months. (The full strength of a Company of Yeomanry if every man was in the ranks is only 150. Full strengh, however, is never realised in war, and it is unlikely that these two Companies possessed more than 100 men or so apiece).

In the *C. of E. Rem. Appendix F*, p. 312, a table of losses is quoted in a letter to the Inspector-General of Remounts showing the wastage in one month in General Elliot's Division which left Glen for Harrismith on 18th August, 1901, see p. 173. In that short time, out of a strength of 2936 horses no less than 969, or roughly one-third of the strength, had been lost.

The "Times History" grapples with the question of wastage during 1901 in its usual vigorous manner, and, having dealt with the monthly importation, adds :—

"Even this enormous supply was insufficient. Kitchener had failed to bestow the attention it deserved upon this important matter. Ground lost was never wholly regained. Quantities of animals were still thrown prematurely into the field, unfit and unacclimatised, quickly to succumb to the rigours of campaigning. The sickening waste of horseflesh which ensued was partly, of course, a corrollary to the policy of tossing half-trained horsemen into mobile columns; but there was also much administrative blundering and much inexcusable neglect in the field. The remount camps and rest camps were not properly inspected, and it was not until November that Kitchener took effectual steps to remedy this defect. At the same time it is but fair to say that these camps—so constant and pressing were the demands for mounts—were never given a fair chance of becoming efficient and serviceable. In the field, even when the troops had become veterans, the consumption of horses was far too great. The regular troops were the best horse-masters and the Colonials the worst, but the standard throughout was not high. At one time, in imitation of the Boer practice, Kitchener tried the experiment of furnishing Columns with a quantity of spare horses. The result was only to encourage waste."

It is unlikely that those now living will ever know the real policy which lay at the root of the extravagant waste of horses, but so far as a close study of available material permits, it appears to have been based upon a misapprehension of the enemy's spirit of resistance. A misapprehension deeply rooted from the first days of the campaign and never, we believe, extinguished. It seems to have been considered that the terror produced by columns sweeping over the country, effecting captures, devasting property, laying waste the land, and removing families to concentration camps, would bring the enemy to his knees. With a nation less adamantine, and less saturated with the religious fanaticism of being a chosen people, it is most likely that one, or at the outside two sweeping operations of this nature would have sufficed as an object lesson. Had such been the case the sacrifice of unconditioned horses would have been justified in bringing the war to a speedy termination. But the results of these first operations pointed the other way. Converting their land and houses into a wilderness only had the effect of stiffening resistance; removing their families to concentration camps, feeding them, caring for and educating their children, placed the Burgher on a far stronger war footing. Olive-branch proclamations were regarded as indications of weakness, and the bearers of them to the commandos were tried and remorselessly shot. The enemy, through training and confidence, passed from the stage of defence to that of attack, and not only had already carried the war into a British Colony but maintained it there up to the last day of the campaign.

The loss of unfit horses early in 1901 would never have caused a second's consideration had the military policy adopted in January in the Eastern Transvaal been a success, for the end would have justified the means, and the means appeared at that time to be such as would attain the object aimed at. But a sacrifice which is justifiable as a temporary measure may be unjustifiable for permanent adoption, and we entirely agree with the *Times*' criticism—that the waste of horses was the result of employing unfit animals for operations demanding the highest physical condition, though we are unable to agree that this was in any way incurred through a lack in the purchasing of horses. See p. 148.

The *Times* does not allude to the other important factor involved in this question, i.e., the food supply. It is almost beyond belief that the daily ration scale consisted of only 10 lb. corn, and whatever else might be picked up from farms or by grazing!* Of hay there was none excepting when near the line of rail, while grazing was variable and depended upon the season, the work in hand, and above all the column commander. Here lies the kernel of the whole question; horses cannot be got into condition without food. Even—as we venture to think—had it been possible to delay active hostilities for a few weeks so as to begin with animals fit for work, such fitness could only be maintained by a sufficient food supply, and from the first day of the campaign to the last this was not forthcoming.

The grazing frequently suffered at our own hands, for some columns destroyed the grass by burning, and left nothing but the blackened stones for those who had to follow them. But apart from this, it is a remarkable fact that horses should have been underfed at a time when a large army was engaged for a whole year laying waste an immense country, destroying thousands of tons of grain, and thousands of acres of crops. We never succeeded

* This scale of grain ration is the same as that given to troop horses at home when leading a life of comparative idleness, and two pounds less than that given them when on peace manœuvres.

Nowhere in the Remount Report on the War is there a word of protest against this semi-starvation scale of diet. See also p. 135.

The Report of the Royal Commission is also silent; it refers, p. 117, to horses and mules being "often on short rations," but it was evidently ignorant of the scale of grain rations laid down. It is impossible to conceive how such a highly technical enquiry could be carried out without expert knowledge; the interest of the horses should accordingly have been represented on the Commission, and evidence taken from veterinary officers who had served at the seat of war.

generally in learning to live on the country, or turning to our own advantage such supplies as it possessed. Of course, much was hidden away or the enemy could never have kept the field, while transport for discovered supplies was not always available. But making every allowance for these, we are not an army of thrift and providence, and it was always easier to destroy supplies by burning, or even turning them into a river,* than to trouble to bring them in. This propensity for destruction was also stimulated by the military programme which enjoined it as part of a regrettable necessity.

Briefly, had we conditioned and fed our horses well, the miserable and shameful toll of waste during the year 1901 would never have occurred. It would then have been possible to deal seriously with horse wastage due to defective or bad management.

It appears to us that the months of March and April might have been devoted to getting horses into condition and putting flesh on them, though whether it was possible to stay military operations for this purpose is a question obviously outside this History, With two months, good feeding and steady work these animals would have been able to take the field with a monthly wastage which, at the outside, would not have exceeded 8%, as against the 25% actually occurring. † Two-thirds of the waste would have been controlled, and the proportion of remounts required correspondingly reduced. To replace the 8% monthly, 4800 remounts would always have required to be under training, a very large number, but by no means impossible when spread over the existing large depots. These horses would have needed 2500 men to train and look after them, but in this matter we were exceptionally well situated in South Africa, as the Kaffir is both fond of horses and can be made an excellent horseman. Thus, without drawing a single soldier from the fighting line, it would have been possible—given the above two months—to have "conditioned" all the horses required and sent them out fit for work. The training referred to is not, of course, the methods of the "High School," but common-sense hardening of muscles and tendons, expansion of lungs, and adjustment of circulation, together with hardening and conditioning of backs, without which no horse untrained to the saddle is fit to carry a man.

We have stated the outside rate of wastage, and the outside requirements, for it will not be forgotten that of the 8% normal wastage monthly, at least 4% would have been returned to the ranks, provided efficient means for collecting the horse *débris* of columns existed, and already at the beginning of 1901 the principles of such a scheme received official acknowledgment.

None of the earlier operations in the Transvaal and Orange Free State during 1901 were such as should not have been capable of being performed by horses in good condition, well fed and well cared for. It was not until towards the end of the year that long daily marches of forty, fifty, or even sixty miles were generally demanded. In the Cape operations, long and rapid marches were characteristic from the beginning, and the sacrifices in that Colony were on a totally different plane from those elsewhere. In the Cape the object was to hustle the roving bands out of the country, no matter at what cost, In the Transvaal and Free State it was not a question of driving them out of the country but hemming them in, and endeavouring to compel them to coalesce and fight; to drive them out of the country was the last thing desired. So that the conditions leading to the waste of horses in Cape Colony was not on all fours with those in the Free State and Transvaal.

We cannot leave the question of the employment of unfit horses for war in 1901, without reference to the official correspondence on the subject. All the following cables have been published in Parliamentary Paper Cd. 963, 1902.

The earliest is cable No. 74 from Lord Roberts (then at the War Office) to Lord Kitchener, in which he says:—

"The heavy wastage in horses is due, as we both know, to their being worked before they are fit. Would it be possible to commandeer, under Martial Law, in the districts of Cape Colony sufficient to enable the remounts to get a month's rest and exercise before being put in the ranks?"

In reply to this on 10th January, Lord Kitchener stated he was getting as many as possible in Cape Colony, and would do his best to give the remounts the rest required.

From the Secretary of State for War to Lord Kitchener, Cable 96, dated 21st November, 1901.

"Reports reach me from many quarters that the remount system is still unsatisfactory, and that unconditioned horses are being issued to columns and sent at once on long treks. Your telegram 20th September appeared to show there was then a proper margin. Cannot an officer of sufficient standing be appointed who would refuse to send remounts up country till fit? Surely it would be better to rest some columns for a time than to waste horses."

* The 60th Company of I.Y. was in April 1901, engaged in clearing operations in the South East District of the Orange Free State, A diary kept by one of its number reads:—"To Wepener— emptying large quantities of grain into the Caledon River. . . . "*Rhodesia and After.*"—S. H. Gilbert, 1901.

Into the same river a General was prepared to throw 22,000 sheep he could not drive further, unless satisfactory means could be found for taking them off his hands.

† This estimate would be higher for troops operating in notoriously unhealthy areas during the "horse sickness" season.

To this Lord Kitchener replied on 25th November, 1901, Cable 97:—

"Your telegram 21st November. I am not thoroughly satisfied with result of remount work, though Birkbeck, who is in charge, is not wanting in energy. Could you send out Inspector General of Remounts to inspect, and let him bring with him some thoroughly practical officer or official to look after recovery of partly exhausted horses on hired farms.

With reference to your question, till the recent operations in Natal, which drew heavily on remounts, the best horses arriving had average of three weeks at ports, and weak or in any way unfit horses, longer. I hope I shall soon be able to return to this scale of rest. . . ."

The Secretary of State replied on the following day, Cable 98:—

"The question of resting horses seems to us of the first importance. We will certainly send officers to help you. But no change of hand will be effective unless you lay it down authoritatively that columns must rest till horses are in proper condition. We cannot continue indefinitely to send 10,000 to 12,000 remounts per month to be used up by column commanders in a few days."

To this cable no reply is published. A few days later, the 6th December, 1901, Lord Roberts, cabling from the War Office, No. 100, says:—

"Pray give the horses ample rest on landing, and impress on all Commanding Officers the necessity for animals being taken the greatest care of. The men should never be on the horses' backs when it is possible for them to be on foot."

On the following day, 7th December, the Secretary of State cabled as follows, No. 101:—

". . . . . Lord Roberts is sending Lord Downe and Colonel Hotham to take charge of Remounts at the base in conjunction with Colonel Birkbeck, whose good work is fully appreciated. Several reports have recently reached me of horses from oversea being sent up country and sent on trek unshod, and consequently becoming unserviceable in two or three days. Cannot you issue an absolute prohibition of such practice?"

To this, Lord Kitchener replied on 8th December, 1901, Cable 102:—

"Your telegram of 7th December, I hope that Lord Downe and Colonel Hotham are being sent out only on a tour of inspection, and not in any way to interfere with work of the Remount Department under Birkbeck, with which I am quite satisfied. Horses are sent up from the coast ports to the large remount depots such as Mooi River, Elandsfontein, Queenstown, etc., where they are invariably shod before issue. . . . ."

The Inspector-General of Remounts at the War Office now for the first time appears officially in connection with South African organisation, and on 9th December, 1901, sent the following cable (103) to Colonel Birkbeck:—

"Be prepared to keep 16,000 horses at base depots for one month. How are you off for 'corralls,' also for horse-keepers, native and European, respectively."

On 15th December, 1901, Cable 107, Lord Kitchener cabled to the Secretary of State for an additional establishment for three more remount depots, manned entirely by natives of India, and then adds:—

"A regular establishment is also considered advisable to ride these horses while at the remount depots, so that they might get well conditioned and in regular work before issue to columns. I would suggest that for this purpose 500 Sowars of the native Cavalry, with saddlery complete, should be sent over here."

Beyond this date the cables are not published, but it is evident that throughout the year the question of unfit horses being issued to columns was agitating the minds at the War Office. Reading between the lines of the correspondence quoted, and the evidence taken before the Royal Commission, and Court of Enquiry on Remounts, it was apparently considered that an officer of the rank of Major-General was necessary at the base, in order to enforce the observance of a time limit.* What a dual control of operations would have led to, does not require any deep powers of penetration. The question belonged to Lord Kitchener only. His cables show that he recognised that some period between landing and work was required, and when he mentions three weeks he doubtless gave the maximum which the military position permitted.

Three weeks represent about one third of the time these horses required before joining columns, not for rest, as the cables indicate, but for work. No machinery existed for conditioning riding horses. Captain Eassie, A.V.D., with the remount department had, as we have seen, introduced into the depôt at Bloemfontein a means of exercising masses of animals, and materially conditioning those required for draught purposes, but the conditioning of saddle horses cannot be effected entirely by this means, though it may largely be helped. A riding horse requires to have a weight on his back, *he cannot be conditioned without it*, for part of his training consists in conditioning the muscles of the back and loins, and any horse not so conditioned is liable to fail in the back within a day or two. The symptoms are those of partial paralysis of the hind quarters, and the number of remounts abandoned or destroyed from this cause was astonishing.

The question of conditioning horses entirely centres around the military situation. We have seen from our history that it grew progressively worse, and that the number of mounted troops had to be increased, so that supposing hostilities had been partly suspended during March and April to admit of the conditioning of animals then standing at a strength of 156,000, the difficulties would have again arisen when the force went up to 244,000, as it did in September. Nevertheless, the opinion of a layman in these matters, if he can be permitted to hold an opinion on such a highly technical question, is that 156,000 well-conditioned and well-fed animals would not have necessitated the great

* This is what the Government said on the matter in the House of Commons:—

"The Government are sending out horses so as to get in advance of requirements, and give the animals a month's rest before going into the field. A general officer had been lately sent out to take command of this department alone, and to see that no horse was sent up country that was not thoroughly fit for the purpose."—*Times* Report, 1st February, 1902.

increase later in the year, for every month the enemy was losing men,* and had no further resources, excepting in the Cape operations, for recruiting purposes. We hold the opinion that it was our relative immobility which encouraged the resistance of the enemy, and that consequently a smaller body of fit and well-fed horses would have accomplished more than the vast hordes of unfit, unacclimatised and underfed animals. It may be said than an allowance of fourteen pounds of grain daily (a minimum for large horses) would have been impossible from a supply point of view. If so, we had better give up making war with mounted forces. But as a fact it would not have been so; 75,000 horses on 10lb. corn would have allowed 50,000 horses a daily ration of 15lb. Can anyone doubt, after the account which has been given of the work they were called upon to perform, which of these bodies would have secured the best tactical results?

Neither the regimental officers nor veterinary service are to blame for the low ration scale. We started the campaign badly in the matter of food (p. 14), and we maintained throughout the war a position which was indefensible from the horse-master's point of view. We actually allowed to the horses in this campaign 2lb. less of grain than is given to animals during peace manœuvres! A soldier's horse, as well as the soldier himself, requires to be well fed in war, and any cheeseparing policy at such a time is suicidal. †

Throughout the whole length of the campaign it is difficult to call to mind a single instance in which we caught up, the retreating enemy. Bothaville (p. 109) may be cited as an example, or the attack on De Wet by Plumer when the former was crossing the Kimberley line during his attempted invasion of Cape Colony (p. 155). But speaking generally the enemy were safe from capture, which no one knew better than they. It ought not to have been so, further, it would not have been the case had the horses been highly fed. If the fuel is not available the machinery stops.

* See Appendix, "Official History,"

† The Campaign in the Crimea is a classical example which one would have thought ought never to have been forgotten. Six thousand pack horses were at Varna awaiting embarkation for the Crimea, they were subsequently sent to Constantinople to form a reserve depot for animals. The Commissariat Department, "no doubt remembering their instructions to 'cut things fine,'" kept these animals on half rations. The Commissary-General stated before the Royal Commission that "the animals were not worth their keep." When this reserve arrived in the Crimea, "thanks to the half-ration *régime* at Constantinople, 'they lost no time in dying.'"

After 14th November no hay was issued, and only 2¾ lb. of barley per horse. "Enormous quantities of forage were available a few days' sail distant." A hydraulic press put up at Constantinople to press hay for Balaclava, was erected 15 miles away from the hay.

See "Army Administration in the Crimea," Captain R. D. Barbor, A.S.C., *Journal of the Royal United Service Institution*, July, 1913.

THE CONTROL OF WASTAGE.

There are a sufficient number of causes of horse wastage on service without increasing them by semi-starvation. Losses would have been experienced had a good corn ration been given, but such losses would have been due to causes incidental to war—hard work and exposure—and they would have been only one-third of those actually experienced. The moral effect upon those charged with the care of partly starved horses is largely responsible for much of the neglect and indifference in management exhibited by the regular troops—artillery excepted. When officers and men were called upon to do the impossible with horses, a spirit of indifference and want of care was soon accentuated, fostered by the fact that fresh animals awaited them. That the large number of available animals had this demoralizing effect is neither excuse nor condonation, but the fact was patent to everyone. The rank and file are at all times difficult to interest in the welfare of their animals (artillery excepted), and it becomes absolutely non-existent when a fresh horse is received every few days. We are not here, however, dealing with the want of horse-mastership, that will be considered as a general question later, but only attempting to show how far-reaching was the effect of the deplorable policy of underfeeding animals in the field.

Another question connected with the series of cables printed at p. 188 must now be looked at. Cable 96 of 21st Nov. from the Secretary of State, says that the *Remount System* appears unsatisfactory, and proposes a remedy. In the reply Cable, No. 97, Lord Kitchener expresses himself as not thoroughly satisfied with the remount work, and proposes a remedy, *i.e.*, the Inspector-General of Remounts to inspect, and a thoroughly practical officer or official to look after the debility cases on the various farms. We are not at present concerned with the latter question, which deals with the recuperation of war-worn horses. The primary matter in Cable 96 refers to unconditioned horses being sent into the Field as soon as they were landed, and to meet this it is asked that the Inspector-General of Remounts at the War Office should come out and inspect. Cable 101 would seem to show that the Inspector-General of Remounts could not be spared, and a Major-General of Cavalry and a Colonel of Artillery were accordingly to be sent out "to take charge of remounts at the base." This was not the scheme proposed in Cable 97; accordingly Cable 102 is sent to the War Office; this is difficult to reconcile with Cable 97 so far as the general remount work is concerned. It makes clear, however, that the officers being sent from home were not to take charge of Remounts at the base, but were only to be regarded as on a tour of inspection and were not to interfere.

Now, these Cables have a far deeper interest for the Veterinary Service than lies on their surface. Lord Kitchener's Cable, No. 97, of *25th Nov.*, 1901,

makes a distinct statement of dissatisfaction with the result of the remount work only, and the reply to this by War Office Cable 98, of *26th Nov.*, promises the remedies he has asked for. On *1st Dec.*, 1901, the Chief of the Staff in South Africa published an Order—to be quoted in full presently—appointing Colonel Long Inspector of Veterinary Hospitals, Remount Depots, Farms and Mobile Columns.

The effect of this Order, so far as the Veterinary Service was concerned, will be considered later; what we are anxious to do here is to trace the connection between Colonel Long's appointment and Cables 97 and 98 of the 25th and 26th November. Here we are assisted by a private letter from Colonel Birkbeck to the Remount Department, War Office, which has been published in Appendix F to the Court of Enquiry on Army Remounts.

The letter is dated *27th November*, 1901: . . .

* * * * * *

"——* has detailed——* to make a searching inspection of all our depots and farms and of the veterinary hospitals, and to report to him exhaustively on the whole subject. Personally, I am very glad, because I think——is a good chap and knows a horse, and I do not think he will find anything wrong."

This letter shows that on the 27th November Lord Kitchener had decided to cause the inspection work of remount depots and farms to be carried out by an officer of his own selection. Curiously enough the above letter intimated that not only are remount depôts and farms to be inspected, *but also Veterinary Hospitals*. There is nothing in the published telegrams which passed between Lord Kitchener and the War Office to suggest that he was dissatisfied with the way the veterinary hospitals in the country were being conducted. His complaint is against remounts, though subsequently even this appears to have been withdrawn. We are now confronted with the remarkable fact that a purely technical institution of another branch of the service, possessing its own departmental head, and with which no fault has been found, is to be included within the scope of an inspection duty connected with the organisation of remount management, and carried out by a layman. We shall look at the qualifications of the inspector so appointed, but in the first instance we must endeavour to ascertain how it was that the veterinary service became included in the pilloried remount service.

Earlier in this history, p. 134, we drew attention to a Parliamentary Paper bearing the number Cd. 963, published in 1902. This paper contains several distinct matters:—

(1) A report by Lieut.-Colonel Birkbeck, dated June, 1900, dealing with the organisation of the Remount Department on active service, and the supply and issue of animals in the field.

(2) A report from the principal Veterinary Officer, Pretoria, dated July, 1900, dealing with the veterinary aspect of the campaign up to date.

(3) Questions in regard to Remounts, addressed by the Quartermaster-General to officers employed in remount operations in South Africa, for the period ending December, 1900. Replies to the above questions are furnished by Lieut.-Col. Birkbeck, dated 22nd December, 1900; the General Officer Commanding the Line of Communication in Natal, and Colonel C. H. Bridge, C.B., C.M.G. (Director of Transport in South Africa from October, 1899 to January, 1900).

(4) Statistical tables dealing with Remounts.

(5) Telegrams and extracts from telegrams despatched and received between June 1899 and January 22nd, 1902, in reference to the purchase of Remounts.

The report which we have numbered (1) above, was written during the month following Lord Roberts' capture of Pretoria. We have already at pp. 114, 134, drawn attention to it in connection with the question which it raised of veterinary hospitals; we have now to look at it in connection with an adverse criticism it contains on the veterinary service, together with a suggested remedy.* This is what Colonel Birkbeck says in his report of June, 1900, on the relationship of the Veterinary and Remount Services:—

. . . . . .

"*Relation of Veterinary and Remount Departments.* There should, I think, be one head to control the general organisation of both Veterinary and Remount Departments, I mean as regards the location of the veterinary field hospital, and the disposal of animals returned from the front.

In this connection the two services are so closely allied that it is difficult to draw the line of demarcation between their spheres of action. Thus, veterinary field hospitals, sick horse farms, and remount depots, are better controlled by one and the same head, who should be responsible that useless animals are not kept and fed at the advanced depots.

There is a natural reluctance to destroy the wrecks of fine animals which it is difficult for the professional veterinary enthusiast to overcome, and such animals, though useless for the present campaign, are apt to be kept in veterinary field hospitals eating rations which are more valuable the further they are brought from the coast.

By all means let the technical work and distribution of veterinary stores be carried out by the Principal Veterinary Officer, *but it requires a Staff Officer of wider training*—if I may be excused for saying so—*than a Departmental Officer is likely to possess, to direct the general policy of the veterinary operations.*" †

We now know that as early as June, 1900, the Assist. Inspector of Remounts in South Africa was satisfied that the Remount and Veterinary Services should be under and controlled by the same head. We acquit Lieut.-Colonel Birkbeck of any attempt

* Blank in the original.

* It is necessary to explain that when 1 and 2 were written the campaign was regarded as over, and reports from heads of departments were accordingly called for. Parliamentary Paper 963 is merely a mixture of various questions affecting horses, occurring at widely different periods of the war.

† The italics are ours.

in this report to take the veterinary crown off Colonel Matthews and place it on his own head, for the reason that when this report was written the war was considered at an end. Nevertheless, as a graduate of the Staff College,* he would naturally consider that he was not devoid of the "wider training" that the Departmental Officer was never "likely to possess," and qualified by his then limited experience of this service in the Field, to lay down regulations for its guidance and undertake its management. He got others to agree with him: this necessitates an examination of Paper 3, as classified above.

The questions regarding Remounts (No. 3 above) are addressed by the Quartermaster-General of the Army to officers employed in South Africa, and are fourteen in number. In none of these is the Veterinary Service alluded to: the Quartermaster-General regarded the Remount and Veterinary Services as quite distinct,† and the fourteen practical questions to which replies are desired, do not in any way touch upon veterinary matters. Colonel Birkbeck, who again appears, evidently thought otherwise, and in reply to the question "Can the organisation of *remount work* ‡ on the lines of communication be improved, and, if so, in what way?" replies as follows:—

"I answer this question on the assumption that the organisation referred to is that laid down in the Yellow Book,* which has not been strictly followed in this campaign. The Yellow Book directs that there shall be a Director of Transport who shall control both the Remount and Veterinary Services. In South Africa he controls neither, rightly, I think, *but I do believe that the efficiency of the Veterinary Department would be increased and its general policy controlled by the Assist. Adjutant-General of Remounts* † indicated below." (A diagram not here reproduced).

* * * *

"The Assist. Adjutant-General of Remounts to be constantly up and down the lines, in touch through his Deputy Assist. Adjutant-Generals, and personally with headquarters, base, sections of the lines of communication and Generals of districts, detailed columns. (The latter part of this sentence is not very clear, some word may have been left out). He can thus anticipate requirements and mass his animals where they are likely to be required, *the Assist. Adjutant of Remounts should also control the general policy of Veterinary Department, making it fit in with Remount Depots.*" ‡

The above reply is not without a suspicion of humour. He personally objects to his department being under the Director of Transport, but urges twice, what he has never been asked, that the Veterinary Department shall be under Remounts, and its policy controlled and made to fit in with that of the Remount Department,

Another reply to the Quartermaster-General's questions must be reproduced, it is furnished by Colonel Bridge, late Director of Transport in South Africa. He selects the same question as Colonel Birkbeck for introducing his views on the Veterinary Service, which as above pointed out was not the subject of inquiry.

Colonel Bridge says, p. 28:—

"The sick-horse depôts should be under the control of the head of the Remount Department."

The Quartermaster-General asked no questions about sick-horse depôts. Had he so done, it would have given the General Officer Commanding Lines of Communication, Natal, an opportunity of expressing his views on the Transport-Remount control of the Veterinary Service, to which he was entirely opposed. He regarded these services as distinct, and that each should be under its own departmental head, who should be responsible to the General of Communications.

In these extracts from the replies to the Quartermaster General's questions we miss the views of the late Director of Supplies. Not being connected with Remount work, the questions were not sent to him, but nevertheless we are not without his opinion. In his examination before the Royal Commission he presented a memorandum ‖ on many subjects, some of which were absolutely alien to his department, and among the latter were

* The Staff College gives a higher professional education. After its theoretical course of two years or so, an infantry officer by going for two months to a battery of Artillery learns about horses, guns, ammunition, and interior economy: two months with Cavalry teaches him what other men spend a life-time in acquiring, and so on. It is, therefore, easy to understand that looking on at veterinary work for six months would, *a priori*, render a staff college graduate a veterinary expert.

† Evidence of Quartermaster-General before the Royal Commission on the War. Opening statement.

Q. 2358. As regards the Army Veterinary Department, which was placed under the Quartermaster-General in November, 1901, the best evidence will be given by the late Director-General Veterinary-Colonel Duck.

Q. 2359. Will that be conveniently taken without the Remount Department? *A.* It is entirely distinct; the administration of the Department is entirely distinct.

Q. 2360. But both deal with horses? *A.* He provides the medical attendance for horses, but he would provide for the medical attendance for the Remount Department in the same way as he would for a mounted unit.

Attention is drawn to question 2360. The Chairman could not understand that the department dealing with the remount side of the horse question was not also the same as that dealing with the treatment of horses when sick. Such reasoning should logically place the Recruiting and Medical services of the army under one head. Curiously enough, much later in the enquiry, Lord Esher is surprised to learn that the Intelligence Division of the War Office should be expected to furnish information as to the capabilities of foreign countries to supply horses, and in *Q.* 12,982 exclaims: Why the Intelligence Department? *A.* Because it is in close touch with all the Embassies, and it is the Department which procures information on every point connected with foreign countries. *Q.* 12,983. They are not experts? *A.* They are not experts.

Did Lord Esher consider the Remount Department experts in veterinary matters? The answer is furnished by the recommendations of a Committee on War Office re-organisation, of which he was President, which placed the Veterinary Service under the Remount Department.

‡ The italics are ours.

* See this History, p. 114.

† The italics are ours.

‡ Idem.

‖ See R. C. Appendix 35, p. 345.

his own views on Veterinary Hospitals and who should control them. The interest he has taken in the organisation of the Veterinary Service is, to say the least, remarkable.*

It would probably strike him as astonishing if an official memorandum had been prepared by an officer of the Veterinary Service for technical evidence before a Royal Commission, in which he ventured to criticise the organisation of the Supply Service in war, and lay down authoritatively the system by which in future it was to be conducted. Yet a parallel course has been pursued by the late Director of Supplies.

This is what he says in the memorandum referred to above:—

"Sick Horse Depots."

"Sick horse depots should be directly under the remount administration. . . . ."

The remaining paragraphs of his remarks will be found at p. 135.† Incidentally it may be mentioned that in the above memorandum he proposes that the duties of the Supply and Transport Services shall embrace not only supplies and transport, but disembarkation, railways, including construction, Remounts and Veterinary Service, the latter being under the former.

Among the witnesses examined by the Royal Commission was the late Director of the Remount Department in India, Colonel Deane. He made a tour of the seat of war in the capacity of a Staff Officer of Yeomanry and was brought much in contact with the Remount operations and its Assistant Inspector. His evidence is very interesting as being that of an expert trained in a country where war is a chronic condition, The only part of it we intend to deal with here, bears on the subject at present under examination.

In *Q.* 13,071 he says "Then again, a point which struck me, if I may refer to it, was that the English War Tables show that the arrangements of Remount officers in the field are in charge of the Director of Transport who has also control of the Veterinary Service. As a matter of fact, he was in charge of neither one nor the other, and very rightly, because it was impossible for him to control both in addition to the vast transport service. The control should have been placed in the hands of the Inspector or Director of the Remount Department, and I think he should not have been under the rank of a Major-General."

This witness, with the authority attached to his late position, was another means of drawing the attention of the Royal Commission to the benefits to be derived by subordinating veterinary work to remount control in the manner, as he himself expresses it,‡ "so well suggested by Colonel Birkbeck."‖

It would certainly appear from the evidence quoted that no opportunity was missed for securing a subordinate position being assigned to the Veterinary Service.

We are now in a position to understand the appointment of Colonel Long as Inspector of Veterinary Hospitals. Lord Kitchener was committed by his cable 97, to take steps to remedy his dissatisfaction with the Remount Department, but it is evident from cable 102 that he did not approve of the appointment made by the War Office, which would in effect have tied his hands. The next best step was to make an appointment of his own, and he selected Colonel Long. There can be little doubt that the views of Colonel Birkbeck, so clearly expressed in his reports of June and December, 1900, were placed before Lord Kitchener.* Representations of the difficulty in extracting cases from hospital,† of the retention under treatment of horses not considered by the Inspector of Remounts as offering a prospect of recovery,‡ and of the reported inability of the veterinary department to understand staff requirements(p.191), would appear to have influenced him in making a combatant officer an Inspector of Veterinary Hospitals. The Remount Service thereby dragged down with it the only branch which had hitherto enabled it to keep afloat, or at any time to gain credit for it.‖

It may be urged by some that this appointment was rendered necessary by the inability of the Veterinary Service to manage its own affairs. This history shows that it could not manage its affairs without hospitals or personnel, neither of which existed until borrowed from India. The majority of its officers had then to learn the work as they were civilians without military training; there were no administrative officers for purely hospital service, and consequently no one specially told off to teach them.** They next had to train the subordinate personnel in hospital duties, and in spite of these four extraordinary sources of weakness no reproach, in the correspondence we have examined, has been urged against veterinary hospitals, other than that they did not destroy a sufficient number of horses to keep the forage bill down, or send out unfit animals for duty. Nevertheless, a real reproach existed. They were congested to an extent which no one could have anticipated, owing to the enormous amount of inefficiency which existed. To this were added the inability to obtain either the necessary amount of labour for looking after the animals, or a large enough staff of skilled subordinates to carry out the treatment. For none of these defects could the Veterinary Service be held responsible.

* See p. 135.

† This History.

‡ R. C. Appendix F, p. 587.

‖ It will further be observed that the language employed by Colonel Deane is almost identical with that used by Colonel Birkbeck two and a half years previously.

* See Colonel Birkbeck's letter dated 27th November, 1901, reproduced at p. 191, written some few days before the order on the subject was published.

† See this history, p. 139.

‡ See page 134.

‖ See this History, p, 129.

** See p. 119.

The following is the Order which was published:

"Commander-in-Chief's Office,
South Africa,
December 1st, 1901.

Colonel Long has been appointed Inspector of Veterinary Hospitals, Remount Depots and Farms. All Departments will give every assistance, and carry out Colonel Long's requirements and suggestions with the least possible delay.

Colonel Long will also, when possible, inspect Columns with regard to the state of horses and their treatment when out on trek, and make any suggestions for the improvement of the horse management and the care given to horses on the trek.

He will see that the local Veterinary Officers inspect all Columns carefully on arrival at a station and before leaving, to ensure that no horses remain with Columns who require veterinary treatment, or go out on trek when not in a fit state to bear the fatigues of the march.

IAN HAMILTON (Lieut.-General),
Chief of Staff.

The effect of this Order upon the veterinary service was stupefying; hitherto with all their difficulties they had been able to show results, and to lead the Remount Department on right lines where given the opportunity. That the hospitals were capable of improvement this History abundantly testifies, though great advances had been made since 1900. The difficulties which existed in 1901 were intensified by congestion, the result of a sick rate averaging 20,000 or more animals a month,* and want of proper accommodation and cover for the sick which could not be supplied. An improvement in the structural requirements of hospitals was urgent; proper enclosures each containing only a limited number of animals, ample water supply, ample mangering, some cover for the worst cases, protection against cold for the debilitated. None of these points had been neglected in the way of representation, but the branch of the service charged with these duties was busy with block-house lines, accommodation for sick men and stores, and had, over and over again with the best intentions, failed to comply with demands which it was known were reasonable, but for which neither labour nor material could be diverted. Every representation made by the Principal Veterinary Officer to the Commanding Officer Royal Engineers in South Africa was received with sympathetic consideration, but there was the old cry "the war may end any day," and in the meantime what was considered more urgent work had a prior claim. Officers in charge of hospitals cried aloud to the P.V.O. for their requirements, and probably often thought their complaints fell on deaf ears. It was not so, but the P.V.O. was not armed with the same powers subsequently possessed by Colonel Long, who was authorised *to order in Lord Kitchener's name* everything he considered necessary. The pendulum now took a violent swing in the other direction: quite a feverish activity prevailed in carrying out improvements, and in building stabling. Money was poured out like water. A new hospital, costing thousands, could be obtained without hesitation, and not always with due discrimination as to the requirements of the place, or the oscillating centres of the campaign. The work was carried out under conditions approaching panic, which is always extravagant.

The structural improvements following on his inspections were considerable; the same could have been effected by anyone armed with Lord Kitchener's direct authority. As to the veterinary work, Colonel Long was far too well informed to interfere,* while a veterinary officer on his staff always accompanied him.† He devoted his energies and authority mainly to the betterment of accommodation, and improving the conditions under which the veterinary work was carried out. For these improvements, though they came late, we can scarcely be too grateful. But, as above stated, the work carried out by him in connection with the improvement of veterinary hospitals could have been better carried out by an officer of the Veterinary Service armed with the same authority, whose technical knowledge would have rendered him a more completely valuable instrument, and we venture to think a less expensive one.

It must not be inferred from Colonel Long's appointment that the inspection of hospitals was not carried out by the Senior Veterinary Officers on the line and by the P.V.O. The administrative officers were few in number: 1 to Natal, 1 to the Free State, 1 to Cape Colony; the Transvaal fell to the P.V.O. With such a microscopic staff for a sub-Continent it was impossible, with the many other duties, to do more than make periodical visits to the forty-two hospitals which existed over the country at the end of 1901, There should have been three Veterinary Inspectors of hospitals, one each in the Cape, Free State, and Transvaal, charged with no other duties than passing from hospital to hospital, and by the closest supervision and initiative extracting the best results. Such appointments, with power to order necessary repairs and accommodation, would have been of immense value, such as no lay Inspector of Veterinary Hospitals could ever hope to attain, even though, as in the case under consideration, he was a man of exceptional knowledge of horse management.

Without detracting from the six months good work which Colonel Long was able to accomplish in connection with the building of hospitals, it must be remembered he was armed with powers such as no other man wielded during the war. The influence of his appointment on the Remount Service is another story; and does not fall to us to narrate, even if the facts were fully known. His service in connection with the inspection of columns was of the greatest benefit. It is true he could see but

* Towards the end of the year as many as 28,000.

* No doubt at his visits he pressed for or ordered the destruction of horses. It is known, for instance, that he ordered 350 scabies cases to be destroyed at Standerton on 17th June, 1902, but this was after the war.

† It is clear from the pages of this History that the small numbers of the A.V.D. in South Africa did not admit of this loss to its executive.

few of the scores in existence all over the vast theatre of war, but as a protective measure the appointment was of the greatest importance. For the work to have borne the best possible fruit, there should have been half a dozen instead of one Inspector of Columns.

Army Orders issued during 1901 to control Animal Wastage.

The animal wastage occurring during 1901 did not escape the attention of the Commander-in-Chief. On 24th January, the following Army Order was published on the question, and incidentally it serves to indicate the first appearance of a definite order for Columns to collect their own animal wastage. The officer referred to in the Order was always the veterinary officer when one was present, The scheme was the germ of official recognition that something must be done in the matter of collecting the animal *débris* of war.

Care of Horses.

It has been brought to the notice of the General Commanding-in-Chief that sufficient attention is not paid by Column Commanders to the care and well-being of the animals upon which the mobility of their columns so much depends.

The following rules are published for guidance :—

(1) Horses should not be saddled up unnecessarily early and kept standing.

(2) The mounted troops of the main body will walk and lead their horses for a considerable distance each day. Every opportunity must be taken by individuals of dismounting whenever halted even for a few minutes.

(3) Halts should, if possible, be made at previously arranged times and for fixed periods at spots where the grass is good.

If considerations of safety admit, the girths should be loosened, saddles shifted, and bits removed to allow the animals to graze. The equine stomach is small, and requires constant filling.

(4) Opportunities should be given for watering horses after the sun is well up, and again about mid-day and before sundown.

(5) Officers commanding Columns will arrange for an Officer, with a sufficient number of kafirs on ponies, to collect and drive along with the baggage column all weakly and sore-backed horses which are unfit for duty.

This party will collect and bring along all derelict horses, British or Boer, fit to travel and likely again to become serviceable—those unfit or utterly useless must be destroyed.

The waste of horse-flesh will thus be diminished, and spare horses accumulated by columns.

On reaching the railway these animals should be handed over to the Remount Department.

(6) Weakly horses should not be sent with flanking parties.

On 22nd February, 1901, an Order was published that no sales of cast or debilitated animals were to take place.

On 22nd February, 1901, there were further orders regarding animals being abandoned, and it was prescribed that horses and mules with Columns, if unfit for work, should be sent to the nearest military post for transfer to a Depot or Veterinary Hospital, as opportunity occurs. If too far from a military post to carry out the above Order the animals were to be destroyed.

Apparently no good results followed these Orders, for on 2nd April, 1901, another was published on the subject, and the wear and tear of Columns was directed to be reported weekly. Even the salvage of animals indicated in the previous Order would not appear to have been carried out, and in consequence the "Rules" laid down on 24th January (see above) were republished as an addendum to the following Order :—

Care of Horses.

The G.O. Commanding-in-Chief fully recognises that, under certain conditions where some important advantage can be gained by rapid and sustained movement, the sacrifice of horses may become a military necessity.

On the other hand, there are many occasions where columns are not in absolute touch with the enemy, in which by more care and attention to the length of marches, watering, feeding, grazing, marching the men dismounted, and off-saddling, the present waste of horses and mules might be avoided, or at least greatly reduced.

In a number of cases at present, the wastage is little justified by the results obtained, and does not reflect credit on Column Commanders.

The G.O. Commanding-in-Chief, therefore, trusts that Officers Commanding will use every endeavour to keep their horses in good condition, thereby reducing to a minimum the heavy strain now experienced by the Remount Department.

Officers Commanding mobile columns will send in every Saturday to Army Headquarters a weekly telegraphic state specifying :—(*a*) The number of horses in possession at the commencement of the week ; (*b*) the number of horses killed, died, and destroyed during the week ; (*c*) the number returned to Remount Sick Lines ; (*d*) the number unaccounted for ; (*e*) the number received from Remount Department or other sources ; (*f*) the number remaining in possession at the end of the week. Similar information should be furnished regarding mules. *

Officers Commanding Columns should remember that horses abandoned on the march are generally picked up and used by the enemy. Every effort should, therefore, be made, and natives should be employed, to bring in such horses, and where it is impossible to do this they should be destroyed.

Commanding Officers should give every assistance to Local Captain Macdonald and his agents, who are employed to collect stray Government horses, cattle, etc.

The collection of the stray animals by columns, referred to in the last paragraph of the order, draws attention to the formation of a Live Stock Recovery Department which was created on 7th January, 1901, and has been already referred to at p. 120.

Another measure for the preservation of animal life was embodied in an Order first published 25th April, 1900, and republished on 7th July, 1901, in which the burning of the veldt was prohibited, either by the carelessness of the troops or intentionally by farmers. It is astonishing considering that the whole force of horses, mules

* On 24th January, 1901, an Order had been published directing a weekly report to be furnished of the casualties among transport mules and oxen.

and oxen in South Africa were officially dependant on the veldt for their hay ration, that wanton destruction of large grazing areas was caused by some column-commanders firing the veldt, and leaving the area to be subsequently traversed by columns a blackened wilderness. When orders were issued to destroy crops some commanders fired the grass in an excess of zeal, a futile proceeding as far as the enemy were concerned, and a disastrous one for our own animals. It is incomprehensible how men could have been found to scuttle their own boat thoughtlessly, for though horses and mules had a small corn ration, the oxen were entirely dependent upon what they could obtain by grazing.

The overloading of transport waggons, drawn attention to in the Army Orders of 1900, had steadily grown until the transport early in 1901 was out of all proportion to the force it accompanied, see Fig. 1. The following Army Order dated 29th July, 1901, reveals the situation :—

"It has come to the notice of the General Commanding-in-Chief that in many instances the allowance of baggage authorised for mobile forces is greatly exceeded, and that transport allowed for supplies is used to carry miscellaneous collections of unauthorised articles. Captured transport, instead of being handed over on the force reaching the line of communication, has in some cases been retained with mobile columns and used to convey such articles as cooking ranges, furniture, and even pianos and harmoniums.

"It appears that it is necessary to remind Commanders of Columns that the essential factor of a mobile force is mobility, and that nothing should be carried beyond what is requisite to feed men and animals, and to maintain fighting efficiency.

"If Columns are habitually impeded by unnecessary transport they cannot act effectively, and Lord Kitchener directs officers commanding mobile forces to ascertain personally that all superfluous equipment, baggage, stores, and vehicles are in future dispensed with."

As the practice continued in spite of the Order, it was later on directed that the above should be read to the troops not less than once a fortnight.

In connection with this matter, and bearing on the question of horsemastership, a witness before the Court of Enquiry Rem., stated, from personal observations, that he had known oats left behind in order that baggage might be carried.

Q. 3819. Is it within your knowledge that these horses were properly fed at the front? *A.* I am quite aware that it was impossible to feed them at times, and impossible always to give them the attention that they would require, but still, if anything went wrong with a column they would throw off the oats first and carry on the other baggage.

Q. 3820. Is that hearsay? *A.* No, I have seen it myself; if a waggon broke down they would unload the sacks of oats in order to load up probably another waggon containing furniture. I do not want to make any sort of charge, but from the Remount point of view that was very exasperating.

The Commander-in-Chief was equally concerned for the care of his transport oxen, as may be seen from the Army Order of 5th January, 1901, referred to at p. 144.

On 28th November, a Memorandum was issued by the Adjutant-General, in which the Commander-in-Chief directed that only horses which were really fit for hard work were to accompany Columns, and that for the unfit a temporary base was to be formed on the line. The horses so left behind were not to be employed on any duty. It was further directed that remount horses were not to accompany Columns within seven days of their receipt from the Remount Department; until then they were to remain at the Column's base.

The number of horses left at this base was to be reported, and Column Commanders had to notify the Remount Department, after each trek, of the number of animals they had been compelled to return to Remount Depots and Veterinary Hospitals.

The same order directed the formation of a mobile Veterinary Hospital in each column. It was specially stated that cases of sore back were to be at once handed in to this hospital, and that if no spare animals were available the men must walk.

The war had been in progress two years before mobile hospitals received official approval. It is true they existed in several places, but their employment depended upon the Column Commander. They were now, for the first time, directed to form part of each Column, but the order came too late. With the appointment of Colonel Long—a few days later than the above Order—veterinary assistance was largely withdrawn from columns and placed on the line, so there was no one to take charge of the mobile hospitals. This policy was the opposite of that pursued by the P.V.O.; the disadvantage of a dual control was not long in manifesting itself.

VETERINARY HOSPITALS, 1901.

During the last month of 1900 it was decided by the authorities that *one* thoroughly equipped Veterinary Hospital should be erected, equipment and personnel being withdrawn from other hospitals and sources, to complete what was intended should prove a model establishment. The place selected for its creation was Elandfontein, close to Johannesburg, and within three miles of the largest Remount Depot in the country. The site was at an altitude of some 5,800 feet, and was practically safe from horse-sickness. Here was developed under successive administrations, but mainly under that of Major Pringle,* a hospital with stabling for 500 sick, general accommodation for over 2,000 horses, together with a good subordinate staff, and equipment for dealing with matters on a basis not previously permitted.

The beginning of the year 1901, saw this hospital in full work, and it is fortunate that during the remainder of the war the Head-quarter Staff of the Army, and others, had an opportunity of seeing the organisation the Veterinary Service could put into their hospitals when given a free hand and assistance.

* Now Major-General Pringle, C.B., D.S.O.

From January to December, 1901, the total number of admissions to this hospital at Johannesburg was 24,606. An analysis of these cases is valuable as showing the class of disease met with on active service :—

	Admitted.	Cured.
Debility	6785	2506
Mange	5049	3549
Lameness	4994	3560
Sore Backs	2747	1592
Wounds	1938	460
Glanders (clinical cases only)	238	—
Quitters	236	195
Various	2619	2732
	24,606	14,594

Out of 24,606 cases 14,594 were cured and returned to duty; 6540 were destroyed from various causes, and 2142 died. The balance of 1330 remained under treatment. The weekly average for the year would accordingly be :—

Admissions	473
Discharged to duty	280
Deaths and Destructions	167

In round numbers it may be said that nearly 60% of the admissions were cured and returned to duty, sufficient evidence, if any were required, of the value of a hospital. The deaths and destructions were 35·2 %.

It is interesting to know what work was being accomplished by some of the other hospitals in South Africa during 1901.

	Months	Cured	Died and Destroyed.
At Middelburg ° Transvaal	in 7	56·5%	24%
Kimberley	8	63	24
Stormberg	12	65·8	25·8
De Aar	6	74	15·25
Orange River	6	26	20

The latter was a typically bad hospital. It will be observed the death rate was no higher than in the other hospitals, but the cases were not got out to duty.

The good results obtained by hospitals were brought to the notice of the War Office later in the year, who were asked to authorise the formation in South Africa of a Field Veterinary Hospital to contain 2,500 cases, with the following staff :—3 Veterinary Officers, 4 Non-Commissioned Officers, 5 Shoeing Smiths, 4 Privates, 25 Veterinary Assistants, 5 Conductors in charge of natives, and 520 Natives, on the basis of one to every five horses. Extra duty-pay was allowed to the Non-Commissioned Officers. The scheme was a good one, its only weak point being the small proportion of Non-Commissioned Officers, who should have been at least ten in number, for supervision is the keynote to success. It is to be regretted that approval was only given for *one* hospital on the above scale, and this at a time when the War Office knew that there were always twenty to twenty-eight thousand fresh cases of sickness occurring monthly, among the horses in South Africa.

At the beginning of 1901 there were 38 Field Veterinary Hospitals dotted all over the country, and varying in strength from 300 patients to 3000. Towards the end of the year there were fifty such hospitals. The work these did was of unequal value owing to local difficulties, want of organisation and personnel, and the inability of some of those in charge—many of whom were civilians—to adapt themselves to military methods and requirements without experience and training. It is for this and other reasons we have stated that an Inspector of Veterinary Hospitals for each Colony should have been created, with no other duty than passing from hospital to hospital, organising, assisting, directing, and showing the right way to obtain the best results. Had such a system existed and the inspecting officer been empowered to order what was absolutely necessary, there would not have been any occasion for the appointment of Colonel Long.

An effort was made to have hospitals arranged on a general plan, the details of which naturally varied with local conditions. Such a scheme was intended as suggestive, and showed the officers in charge what was expected from them. All, however, were not equally apt in making the best of local conditions, while, on the contrary, others showed initiative which reflected itself in their general good arrangements. One of the greatest drawbacks was the absence of authority on the part of the Civil Veterinary Surgeons in charge; they could give an order, but to enforce it, or to deal with breaches of discipline necessitated invoking outside aid—a weakening of the general structure which nothing could correct but military status and rank.

The local facilities for hospital organisation differed at every place. Some stations lent themselves readily to the purpose, others were equally refractory. Water was the great difficulty, and without an ample supply no thoroughly good work could be done. Military considerations frequently restricted the available site, and some Commandants had an idea that a hospital for animals was associated with something so excessively unpleasant, that the most unfavourable and out-of-the-way position was allotted it. * An instance of this occurred at Belfast in November, 1900, p. 151, where

° I have to thank Major Cochrane, A.V.C. for this information.

* The notion that a veterinary hospital was an offensive institution, to be kept as much as possible out of sight, had not died down after the war. When the site for the present cantonments of Pretoria was laid out, it was proposed that the veterinary hospital should be placed far away on a flank, adjoining the ground used for the disposal of the cantonment excreta! It is obvious that a hospital to be of any use must be centrally and conveniently situated to the troops for which it is intended, and on uncontaminated ground.

the hospital, having been pushed almost beyond the entrenchments, found itself during the night attack on that place exposed to the fire of defender and attacker; but for the fog it would have been captured by the enemy, who passed close to it. At Stormberg, a piece of ground quite unfit to hold its 500 sick was all that was considered available, owing to the difficulties of providing it with defence. The position was hopelessly restricted, and a better one was only given on the understanding that the hospital would dig and man its own trenches for defence.

If suitable sites and water supply were difficulties, they were nothing compared to those experienced in getting anything erected in the form of shelter or protection. The local engineer officers were anxious to help, but said their men were engaged on block-house work, and that all constructive material sent by rail was for block-house purposes only. Over and over again did the P.V.O. in Pretoria endeavour to arrange with the Commanding Royal Engineer for a start to be made by the construction of shelters, especially at those places known to be affected with horse-sickness. A type of building had, in the first instance, to be "got out" on paper and approved, in which the primary consideration was to be cheapness. Month after month building operations were deferred from one cause or another, congested railways, supplies, movement of troops, block-house lines, etc. All of these were quite true, but the delay was mainly, no doubt, due to the belief that the war might "end any day."* In the meantime the Veterinary Service in charge of hospitals had been making bricks without straw for over a year, and felt that their claims to some consideration in the matter of accommodation for their sick were being overlooked. It came as a positive relief to many, after the first shock of the Long appointment (p. 194), to know that they only had to ask in order to receive. The more they asked for, and the more pressing the construction was represented to be, the better the Inspector of Hospitals seemed pleased. He harrassed the Engineers under threats of pains and penalties, and galvanized life into the construction of stabling, mangering and enclosures. Especially was stabling necessary for those hospitals situated on the table land of the Eastern Transvaal. Here, and down to the border of Natal, the winter was very cold, and the only chance of recuperating the debility cases was to screen them from the bitter wind. But anywhere on the table of South Africa the winter is cold and the wind trying. De Aar or Stormberg in Cape Colony, might in this respect rival Standerton in the Transvaal.

Speaking in general terms, the all important structural details for hospitals were water-troughing, mangering, and good enclosures. The system of trying to feed without mangers is shockingly wasteful of forage, every pound of which having been sent from 5000 to 7000 miles across the sea, was then thrown in the dirt or sand, and picked out or trodden underfoot as may be. The absence of mangers led as much as anything else to condition not being regained. What equable distribution of food could occur when it was thrown down on the ground in a line, pawed up by anxious feeders, or blown away by the wind? If the horses had had food in them they would have felt the cold less, and in fact wind screens would have sufficed in the majority of instances, with a certain amount of stabling for the worst cases. Nothing can take the place of mangers; they are the first consideration as far as horses are concerned in a standing camp. Few people outside the mounted branches appear to realise their paramount importance.

The activities of the mobile hospitals, of which the first took the field in Natal early in the war (pp. 85, 86), were sufficiently good to induce the authorities to approve a partial extension of the system. Such hospitals can never be more than a connecting link between the sick in the field and the Field Hospitals on the Line of Communications. If they become congested they are useless; the keynote of their effective management is evacuation. By April the personnel, stores and equipment for a few mobile hospitals had been fixed, but above all the transport, without which it could not move. Further, its staff was mounted. Men who have been trudging along with troops all day are not fresh enough for work when the bivouac is reached. It was during General Elliot's sweeping movements in the Eastern Free State (p. 160) that a mobile hospital was given a thoroughly good and extended test, and proved, under the organising capacity of Major Mann, the S.V.O., how useful it could be made.

Those columns without a regular mobile hospital had, as we have seen from the Army Order of 24th January (p. 195), been instructed to make better provision for the care of sick animals on the march. In the operations conducted by General French in January in the Eastern Transvaal this make-shift system was brought into general operation and proved most useful. Unfortunately, no transport at this time was allowed for the work, which meant that no equipment was carried other than in the regimental waggons. This was not only insufficient but impracticable; the sick and derelicts when collected had to be kept together, and herded somewhere for the night, and this meant that equipment for dealing with them was necessary. Those veterinary officers

* Sir Fleetwood Wilson, who went out to South Africa as Financial Adviser to Lord Kitchener, says that whatever he accomplished was done as the result of "coaxing," in spite of the exceptional advantages he possessed in knowing personally those with whom he had to deal, and having been associated with soldiers all his life. He is, of course, representing his position as a civilian, but nevertheless he was a member of the Headquarter Staff of the Army. See R. C. Evid.: Vol. i., p. 253.

It is not everyone who possesses the striking personality and persuasive powers of Sir Fleetwood Wilson, so that a good case may fail for want of the needful "coaxing" powers; in the military hierarchy, not only are the difficulties of adopting this line considerable, but it would be subversive of discipline.

who were possessed of initiative "found on the veldt" the transport and waggons required, and literally made their own arrangements. Later on, as previously mentioned, regular field establishments and proper transport were allowed to some columns, but by no means all.

It is nothing less than extraordinary the grudging methods followed in tackling the sick-horse question even fifteen months after war began. Money was poured out like water by other branches, but any makeshift was considered sufficient for the needs of the veterinary service. This applied not only to the mobile hospitals but everything else connected with the department in the Field. We believe there was a genuine desire on the part of the military authorities, not only to diminish the waste of horses, but also, as far as was practically possible, to diminish some of the cruelty which must ever be practised in war, but it is remarkable that the efforts of the veterinary service in this connection met with so little substantial support. The transport problem is always a difficulty: as early as April, 1900 (p. 144), attention had been directed to it. In the first half of 1901 it had become serious, and columns were carrying about with them "miscellaneous collections of unauthorised articles."* The Commander-in-Chief found it necessary to remind his Column Commanders "that the essential factor of a mobile force is mobility, and that nothing should be carried beyond what is requisite to feed men and animals, and to maintain fighting efficiency.† From this Order it is evident that a fraction of the transport employed for the carriage of unauthorised articles, might well have been devoted to conveying appliances and means for rendering effective first aid in the field, and in collecting and taking the sick along. The importance of their duty would have been emphasised had these earlier mobile detachments received proper official recognition, and a scale of staff and stores been laid down. It came months later, and, like most other things, too late. On 28th November, 1901, it was directed "In order to reduce the present very heavy wastage in horses," that among other measures Mobile Veterinary Hospitals should be formed in *each* Column, page 196 . . . . On the 1st December Colonel Long was in charge, and on 19th, under his instructions, orders were issued by the P.V.O. that a number of veterinary officers were to be withdrawn from Columns in order to strengthen the personnel of the Field Hospitals on the Lines of Communication. Thus, mobile hospitals having been approved for all Columns, after two years wastage of horses through their absence, were once more relegated to the background. Those already existing did not disappear, but became altered in nature; each large Field Hospital furnished a mobile section, but it was only mobile in the sense that it could be moved from pillar to post on the Lines of Communication. What was required was an organisation with the troops, call it what you may, for dealing with the exhausted, injured and sick, under central and organised management, and responsible for bringing such cases along until fit to be returned to their unit or handed into hospital on the line being reached.

The great difficulty in all hospitals, whether stationary or mobile, was to obtain efficient and permanent personnel. Almost every man in the hospitals existing in the country was borrowed, with the exception of those belonging to the ten Indian Field Veterinary Hospitals, and the one sanctioned by the War Office at Elandsfontein in September. Some of the men employed were deliberately hiding away from their regiments, and were not recovered for months. If he was a useful man, above all a skilful dresser, it was not to be wondered at that no active steps were taken by the hospital authorities to find out where the man's regiment actually was. But, of course, such a system is indefensible.

The year 1901 had seen considerable changes in the personnel of the hospitals raised in the country during the campaign. India had sent a large number of trained dressers, who were distributed amongst them. Civil shoeing smiths, drawing £180 a year and rations, existed by scores, and were also distributed, and useful men among the Dutch population were brought in from time to time as conductors. *

The personnel so acquired gradually took the place of the soldiers who had been borrowed, or otherwise obtained; even then senior non-commissioned officers were required, and these had to be retained throughout the war, though in theory they should have been serving with their regiments. Nevertheless, the whole fabric of the hospitals was unsubstantial, from the Civil Veterinary Surgeons whose time was expiring and who wished to return home by the next ship, to the Kaffirs who deserted after pay day and were seen no more. There should be no such thing as a "scratch" institution with an Army: if it is necessary it should be recognised, organised, and placed on a proper basis.

Much has to be done by the personality of the head of affairs in removing official opposition to the introduction of new ideas.† There are many men and many minds on the Staff of an Army, but if there is one subject on which most of the minds are agreed, it is that of affording as little recognition as possible to veterinary requirements, pushing them into the background, and trusting to time to adjust difficulties. It is the old story of the medical department, with the exception that public opinion has scarcely been aroused in the matter of the horses, in spite of the size of the remount bill. That, after all, is a lower plane than the real one on which we think this question should finally be judged; we owe a moral obligation to animals which cannot be evaded.

* Army Order I., 29th July, 1901, p. 196.
† Idem.

* This was a proceeding not without danger, for these men necessarily became possessed of information.

† See Footnote, p. 198.

The more organisation and permanence introduced into these Field Hospitals the greater the correspondence which arose with other departments, especially that dealing with finance. The Indians were paid by a specially appointed official who dealt with all Indian natives, both with the Remount and Veterinary Services. All others were paid by the Chief Paymaster, and the very large sums of money needed necessitated the officer so employed being made what is technically known as an "accountant," entailing a considerable amount of financial responsibility and elaborate accounts.

The opposition of the Remount Department to Veterinary autonomy died very hard; it never became wholly extinguished, and the young officers of this service were, as usual, the most aggressive. At Orange River a remount officer expressed his intention to inspect the hospital and demanded returns of sickness. At Aliwal North the bold measure of clearing the sick out of the hospital and monopolising the services of the Civil Veterinary Surgeon for purchasing duties was adopted. At Mafeking the cases cured at the hospital were refused by the Remounts, as no information could be given of the units to which the sick originally belonged! Doubtless there were many similar though unrecorded cases of interference. These small matters indicated the feeling still held by remounts towards the veterinary service, though it is right to record there were many exceptions, especially among the senior officers, some of whom were not slow to recognise that undivided responsibility is the first step towards sound work.

One important step taken in Jan., 1901, was a form of return rendered weekly by all hospitals showing exactly how they stood in the matter of patients, the numbers admitted and discharged, the diseases they were suffering from, the staff employed, and the condition of the equipment and stores. The return was so arranged as to reduce clerical labour to a minimum; in a few minutes a document was prepared which enabled the administration hundreds of miles away to feel the pulse of every hospital throughout the country, and see matters as they were actually occurring. Postal services during war are irregular, so that weekly telegraphic states were rendered on a code form previously arranged, which not only reduced the strain on the telegraph department, but took but a few minutes to prepare.

Before closing this notice of the hospitals in 1901, it is due to those members of the profession who assisted the army in a civil capacity to record the ability shown by some of them in hospital management, and in mentioning the names of C.V. Surgeons J. I. Smith, J. Buck and J. M. Parker (the latter a Canadian graduate who died in office) as men showing conspicuous ability and power of organisation, it does not detract from the merits of others whose good work was unfortunately less known.

PROTECTION HORSES, 1901.

In the account for 1899-1900 we drew attention at p. 132 to the fact that two distinct classes of local horse came into our possession during the war, one being captures, the other for protection. It was pointed out that in the rush of affairs no system for dealing with these existed, nor indeed had the matter even been considered.

Protection-horses were those brought in from districts in Cape Colony to prevent them falling into the hands of the enemy, and though tens of thousands were similarly brought in from districts in the Transvaal and Orange Free State, the use of the word protection could not be applied to these, as they were swept up in countries with which we were at war. To this stock the term "captures" is applied. They were brought in in pursuance of an order that no living animal was to be left behind.*

It was in December, 1900, that the comparative peace and tranquility which had for so many months reigned in Cape Colony was suddenly disturbed by the attempted invasion of De Wet, and the actual invasion by Hertzog and Kritzinger. The military authorities at once realised the danger of leaving on the various farms of the invaded districts such a potential source of warfare to the enemy as the horses represented, and Commandants of districts, together with Magistrates, were directed under Martial Law to collect and hold these animals at centres where they would be safe from impressment by the enemy. It was further directed that from these horses all available remounts should be selected and, of course, paid for. We have seen that there was no system for dealing with these thousands of animals, which consisted of horses of all classes, including breeding stock and foals. Doubtless it was at first thought that the emergency would soon pass, and the animals could then be returned to their owners. This idea was rudely dispelled by the second attempt of De Wet to enter the Colony two months later, and it was then recognised how imperfect had been the first collection of material, for, from the animals left on the various farms he had no difficulty, with the aid of Hertzog, in making good his immense loss in horses. Stringent orders were consequently issued, and thousands more brought in. Still no system existed for dealing with them.

Lord Kitchener in April, 1901, issued orders that Columns operating in the Cape were in future to be remounted from local supply only; † the animals so obtained were drawn from protection stock on payment, and on requisition from the inhabitants. As we have already seen, p. 152, foot note, 15,000 were obtained in this way in January, and by the following July 75,000 animals had been obtained from the same sources, in a country previously reported to be unable to furnish a horse supply. In spite of

* See foot note, p. 175.

† "Times History," vol. v., p. 243.

Fig. 4. A mid-day halt. Column resting during one of the operations in the Eastern Transvaal, towards the end of 1901. Note the exhausted condition of the horse lying down; also the rifles left hanging in the bucket, causing the saddle to heel over and damage the withers. Observe the impedimenta placed upon the men's saddles. The central figure is an officer's horse; such carries nothing but the rider.

Fig. 5. A remount photographed the day it joined its unit. Note its condition; also the result of possessing a short dock. The mechanism of a rope gall is seen on the near fore limb.

Fig. 6. A remount photographed on the day of joining. Note the shape of the hocks and overshot hind fetlocks.

Fig. 4 from photograph by
Mr. F. B. GRESHAM. of Newark.

Figs. 5 and 6 by
Captain HEAD, A.V.C. (R).

Plate I.

Fig. 1. Type of Mobile Column early in 1901; note the amount of transport. The horses grazing in the foreground are those of the escort of the column. The scene is typical of the rolling veldt of the Free State.

Fig. 2. Clogs on Column Mobility.

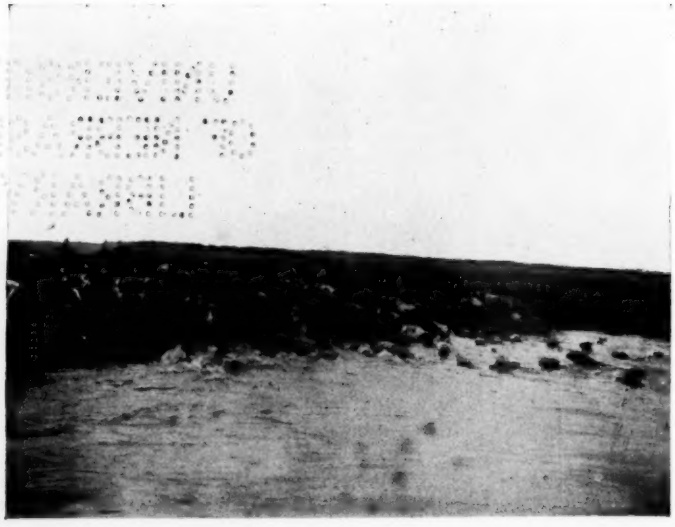

Fig. 3. Loot stock.

From photographs by
Mr. F. B. GRESHAM, of Newark,
late C.V.S.

Plate I.

this heavy drain there were at this time thousands of horses on protection farms, some useful, many useless for military purposes, generally as the result of impoverished condition due to starvation. Efforts were made to train and render fit for the use of Columns some of the vast numbers remaining, and in this respect the Remount Depot at Kimberley was particularly successful, and on a smaller scale the Depots at Stellenbosch and De Aar. *

It was at Harrismith, as we have seen at p. 132, that the first steps in dealing with this class of stock had been taken in 1900. Similar operations were carried on through 1901, the whole of the new Yeomanry with Rundle being mounted more than once, and various Columns in the vicinity replenished. Breeding stock formed about one-half of the captures brought into Harrismith by the various Columns whose movements have already been narrated, and as far as possible an attempt had been made to retain this for the future development of the country. It represented the cream of the Free State studs, and no one had any previous notion of what this consisted. †

Colonel Matthews, in a note written at Standerton in May, 1901, describes his inspection of the 5000 head of stock resulting from one of Elliot's drives. "I spent a most interesting two-and-a-half hours watching these 5000 animals, brood mares and stock, from yearlings to six years old. I had now spent four years in South Africa, and although perhaps I ought to have known, yet I had no conception such beautiful brood mares existed in the country." In a further note he remarked on the facility with which the Australian and New Zealand soldiers converted the brood mares—unbroken even to the halter, and many as old as fourteen years—into saddle horses in the course of three weeks. This, however, could only dispose of a very limited number, and, as opportunity offered, both from Harrismith and the Transvaal, breeding stock, estimated at from ten to fifteen thousand, was sent to Natal. The bulk of this material went to Mooi River; when seen shortly afterwards, overcrowding, starvation and neglect had done their work, and cannot be better described than in the language of one who witnessed it: "It broke my heart to see these magnificent mares, many nearly, some quite thoroughbred, dying slowly from starvation and a variety of diseases." Colonel Matthews says in a note written after inspecting some of this stock at Mooi River: "I found fourteen mares had aborted in one paddock; one or two carcases were lying around in a state of decomposition, and the burial pits, where seven horses awaited interment, were only sixty yards from the main horse enclosure." If the above state of affairs could exist in a large horse station like Mooi River, under the nose of the Remount Department, with horses now the property of the Crown, it can be imagined what occurred at the dozen or more places in Cape Colony where protection horses were confined. Evidence was given before the Royal Commission on the War by Lord Lovatt who, in discussing the waste of public money in the purchase of horses, described one of the Cape protection farms. He says:—*

"For example, 6000 horses, mares and foals were near a place called Burghersdorp, and there was no apparent reason that they should not all have been used for His Majesty's Forces. They were good mares and young horses; there were few absolutely fit to ride at once without training, as the mares in South Africa, although broken to harness, were never broken to riding. The mares were all kept in this place, and apparently no one seemed particularly interested in the matter, and the remounts had them in charge; they were left to run over two or three small farms, and they gradually pined away and wasted for lack of food. No one was allowed to take what they wanted of those, and at the end of the war these 6000 horses had diminished to about 700 or so.

Q. 20,752. Were these captured horses? *A.* They were cleared off farms; I have seen perhaps 1500 or 1200 sent to this farm in one drove.

Q. 20,753. And they were chiefly mares which would not have been used for Cavalry? *A.* Yes, mares; but there was no reason why they should not be used; they only required to be broken and to get a little condition on, and they would have done as well as horses. . . . . .

Q. 20,752. During that time were you not in want of horses. *A.* Yes, and I took them when I passed there, but I was not allowed to take them. I asked leave on one occasion, and I was refused.

Whether the Remount Department should have been permitted to burden themselves with the care of these animals is another question. In our opinion, absolutely not, for their hands were already too full. As far back as 5th December, 1900, the subject of the disposal of the *captured* stock was already exercising the mind of the Assistant Inspector of Remounts, for in a letter to the War Office he says. †

"That mare and foal business is arriving at rather alarming proportions. We are practically clearing the Free State and Transvaal of breeding stock, and transferring it to the Colony and Natal into loyal hands at nominal prices. Of course in time it must all get back to the grazing countries."

This shows how ignorant we were of the horse resources of the country, for the work of clearance had not yet begun and already the number of stock to be provided for was alarming. No provision, however, was made, not even six months later, by which time tens of thousands of captured and protected stock had to be legislated for. It was not, in fact, until October, 1901, that any definite regulations were drawn up for the care of the protection horses in the Cape. The regulations created a "Protection" branch of the Remount Service, but by that time the majority of the horses were dead. Pending the creation of this branch the animals fell to the care of local commandants, who knew nothing of horses, and whose sole anxiety was to prevent their recapture. The wretched creatures were herded at night inside infantry entrenchments, and each day marched solemnly to grazing grounds a short distance away, bare of everything

* At one time De Aar employed fifty roughriders.

† See foot note, p. 185.

* *Q.* 20,751, Vol. ii., Evidence, p 479.

† C. of E. Rem. Evid. Appendix F, p. 366.

but the bones of those which had died. No rations were allowed them. How could they be when our own horses in the field were on a semi-starvation diet? When a remount depot was adjacent they came under its care, as at Burghersdorp quoted above, and in active centres like Stellenbosch the suitable were selected for breaking and trained. Of course, this class of material had no right inside a remount depot, which it only congests. As an example, in July, 1901, there were 100 two year olds being hand-fed in the Remount Depot at Stellenbosch, with no possible prospect of any return for the rations given them, and the hay which was denied our own horses in the field.*

When protection horses were brought in the owner's natural desire was to have his stock purchased outright, and in some cases this was actually done under misapprehension. See C. of E. Rem. Evid. Q. 6515.† Rightly, the authorities negatived any such wholesale purchases excepting for suitable animals, and it was also made clear to the owners that no compensation would be given for loss, and that the animals must take their chance. The regulations, introduced, as we have said, in October, at least gave something definite to act upon; we cannot enter into them. In the coast districts, considered to be safe from the enemy, the horses were registered and remained with their owners; elsewhere they were concentrated on farms. In October the registered horses remaining with their owners amounted to 18,000, the protected horses on farms stood at 22,700, all that was left of certainly double the number, probably more, of the previous January.

The formation of a Protection Department did not stop the mortality. The horses in many cases were past recovery; in some districts the entire herds looked like dying, and the residue was given to farmers to look after. The mortality was due not only to starvation, but disease introduced and disseminated by the unavoidably indiscriminate mixing of sick and well, the young and old; but more especially from starvation, the result of overcrowded grazing grounds. The latter had to be confined to areas under military occupation, and were already well grazed by the transport, or to areas in the neighbourhood of the line of rail or other military posts. Another cause of mortality was due to change of grazing; animals from the midlands were sent south where the herbage differed, or those from the east were sent to the west. Any sudden change from their old to a new grazing district was a source of loss, not only owing to the difference in herbage but from poisonous plants. Animals reared on pasture containing the latter learn from experience to avoid them; the new comer falls a victim. Strangles was rife among these horses; glanders frequent; parasitic disease of the intestinal wall abounded and hastened dissolution under the hardships to which they were exposed.

The arrangements made in October at a cost of about £3000 a month were good, but came nine months too late to be of any real benefit. In October, 1901, 22,700 horses were taken over, and some small numbers were added month by month throughout the war. The numbers so added are unknown, but when the war closed there were a little over 12,000 survivors on farms. The deaths between October, 1901 and May, 1902, amounted to 10,500, say 46%. If 46% died in six months when arrangements costing £3000 a month existed for their care, we can imagine what the mortality was during the nine months prior to October, 1901, when no arrangements existed. It is probably not too much to say, that between January, 1901 and May, 1902, not less than 80% of the Protection stock died, or was destroyed, from disease or starvation.

The account we have given of protection farms differs materially from that briefly recorded in the "Times History" of the War, Vol. vi., p. 444, in which the following appears;—

"An interesting development of the duties of the Remount Department was the protecting of locally owned stock by receiving them into remount farms.

It is satisfactory to know that owing to the care and trouble that was taken over this onerous duty, upwards of 24,000 animals were given back to their lawful owners at the end of the war. Many of the animals had grown out of all recognition, and many were only identified by the careful records kept by the officers in charge of the 'protection' farms."

It would seem that in the 24,000 have been included the 18,000 registered horses not removed from the custody of their owners. We are not told how many horses originally existed. The inner history of this calamity was evidently unknown to the writer of the above notice.

DEBILITY FARMS IN 1901.

The history of debility farms in the Cape and Orange Free State in 1899-00, has been given at p. 137.* It has been pointed out that the Remount Department from the beginning of the campaign took charge of war-worn horses by placing them in their remount depots. When these could hold no more they hired farms, subsequently known as debility farms, into which the horse residue of war was poured, without inspection, and into places which did not afford sufficient support in the way of grazing for the number of animals placed on the farm. The year 1901 saw remount depots containing annexs full of disease, next door to, or even in contact with, the fresh animals from over sea. In addition, there were the debility farms, on which no remount horses were kept. Both places, as we have seen, were affected with mange and glanders.

*** These two year old horses were being allowed 12lb. hay daily, thrown down on the ground.**

† The witness, a Remount Officer, says:—

"At one time there was an order given by mistake to buy every horse, foal, mare and everything. I bought those and, of course, they had to be sent to a farm."

*** See foot note p. 137 for other references, also pp. 132, 133.**

It cannot be supposed that depots were deliberately infected, nor that they were infected through ignorance of the existence of the two above diseases. We have, therefore, to look at this question and ask why it was that a policy continued to be followed which the veterinary authorities before and during the war had pointed out could only result in disaster. The answer is brief, their opinion was not trusted. It was generally believed by the Remount Authorities that glanders did not exist in anything like the extent which the veterinary people stated: as the responsible officer said in conversation in 1901, "if it did we should hear more about it." As to mange, the notion widely existed that what we called mange was an affection of the skin which passed away spontaneously after the winter, and that it was therefore a trifling question. We shall examine the evidence on these points.

In a letter to the War Office dated 10th August, 1901, the Assistant Inspector of Remounts, says: *

"**. . . . By the way you must not be alarmed at mange in this benighted land. Nearly every horse in Government or civilian hands which is left on the veldt in winter gets mange; the inhabitants take no notice of it, and it goes with the new coat; we put them through a disinfectant bath which kills it in a few times.**"

Such an opinion coming from the responsible head of the horse question in South Africa, was calculated to allay the natural anxiety which the returns of disease would create at the War Office; the information furnished to this body we may take to be the information supplied through the same channel to the Commander-in-Chief in the Field. For reasons which do not here concern us, veterinary opinion is not trusted until real difficulties arise. The casual observation or opinion of a layman belonging to the Staff carries more weight than expert advice, and this is not confined to veterinary matters only, though it is intensified in this case, as every mounted officer is given credit for knowing "all about a horse." The grounds for this belief are difficult to see; as a matter of fact, the layman who does know something of a horse is the most appreciative of veterinary advice. We see from the above that it was agreed to consider the question of mange as one of those trifling matters which the veterinary service had magnified into alarmist proportions.

As a matter of fact there is a disease of the skin affecting the native horse which is so like mange that it can scarcely be distinguished; further, as the Assistant Inspector of Remounts says in his letter, it is spontaneously curable, and it may be added is not contagious. These cases, however, did not represent the disease from which the over-sea horse was suffering; with them the psoropt could readily be seen in a warm sun, and the sarcopt by deeper scrapings and microscopical inspection. There was no doubt of the nature of the skin disease existing among the animals in the Field. From the latter half of 1900 up to the time we are speaking of, it was parasitic mange of the above two types.

Regarding the Remount attitude towards glanders the evidence is equally convincing. Not only was the widespread existence of the malady denied, but it was openly stated that the Dutch and the Colonists looked upon our cases as those of "new sickness," a curable affection with which they had in recent years been rendered familiar. The opinion of a Dutch or Colonial farmer on matters of disease was a valued asset to the layman, who took it as his text and preached accordingly; unfortunately, in the matter of glanders, professional opinion was on their side. At least two Civil Veterinary Surgeons employed with the Remount Service believed that the cases condemned by their military brethren as glandered were not cases of the disease. One adopted the view that the cases were pyæmia, the other that it was the "new sickness" of the Dutch, which, according to them, is a non-contagious and curable affection.

With such professional views as these existing in the Remount Service, it is not difficult to understand how gladly they were given credence in discrediting the alarmist report of the military veterinary branch. The layman is always strongest in technical matters when he finds a divided house. The view of the non-glanderous nature of these cases grew and spread, in accordance with the natural desire of the Remount Department to make the best of matters; finally, when their case was believed to be at its strongest point, the Remount Department asked that an inquiry should be held into the nature of the cases which had so long been mistaken by the Army Veterinary Service.

Among the witnesses examined by the Court of Enquiry on Remounts was Lieut.-Col. Darby, a Deputy-Assistant Adjutant General serving on the Staff of Colonel Birkbeck. This officer, from June to September, 1901, was responsible for the Remount Depot at Johannesburg, In his evidence on "new sickness," *Q.*6567, he says:—

"**They get a very heavy discharge. It looks like glanders, but a civil veterinary surgeon attached to the Remount Department said that the ulcerations were not of the same nature as glanders, and he was so sure of this that to prove it he inoculated himself. He did not get glanders, though he got a sore on his hand, and the military veterinary officers in the Field Veterinary Hospital still declaring it was glanders, Colonel Birkbeck asked to have a Court of Enquiry on those horses said to be suffering from glanders, but which the civil veterinary surgeon said it was only "snotsickta" (new sickness). They had this Court of Enquiry at Germiston; they killed four horses, but the results were indefinite. However, they declared it was glanders, and that the horses must be destroyed. But these horses recovered if left alone. Though they were not fit for anything for three months they got alright, and a glandered horse never gets alright. The civil veterinary surgeon who inoculated himself got alright also.**

*Q.*6568. **Did they apply the mallein test to the apparently glandered horses? *A.* Yes. With one of these horses when they tried the mallein test, the temperature instead of going up went down a degree. In the other cases the results were indefinite or not well marked.**"

We have quoted this evidence in full owing to its importance. It is the keynote to the belief of the

* See Appendix F, C. of E. Rem., p. 368.

Remount Authorities in the matter of glanders. We do not intend to examine here the statements made by the witness, but may anticipate what has to be said of this matter in Part III., by stating that the Veterinary Committee appointed by the Commander-in-Chief directed the Civil Veterinary Surgeon to select his own cases of "new sickness" to bring before them. These animals were destroyed and on post-mortem examination found to be glandered.

The evidence brought forward as to the Remount views on scabies and glanders was the growth of many months. The Civil Veterinary Surgeon referred to in the above evidence had previously been in a Cape Depot, and he, and later another, had not only spread erroneous views as to the nature of the disease, but had discounted the opinion of the military branch on the growth and spread of glanders in Remount Depots and farms. Further, being the men on the spot, they were credited with knowing more about the matter than a man hundreds of miles away at the end of a telegraph line. Unfortunately, the "new sickness" and "pyæmia" opinions were listened to not only by the Remount Authorities but also by their administrative veterinary officer, under whose supervising professional care all remount depots and debility farms in South Africa (other than Natal) were placed. He knew that all of these were congested, and that the congestion increased every month; he knew disease was present, but apparently accepted the remount view of mange and the opinion of his civil subordinates on "pyæmia" and "new sickness." We do not urge this to condone what followed, though his depots and farms were hundreds of miles apart, and a man must to an extent depend upon the reports of those immediately in charge. But it was his duty to insist upon systematic periodical inspection of every animal on these farms, and to investigate the nature of the diseases ravaging them, to which so little importance was attached by the layman. There was no systematic inspection enforced or provided for; the officers' commanding farms and depots raised the greatest difficulties and objections to having horses caught up for this purpose; it occupied several hours of the limited staff they were allowed, and disorganised their work. This disorganisation was especially marked in Remount Depots, where, day and night, horses were being got ready to proceed to the front, or new horses landed. Further, the condition of the horse population of Cape Colony, see p. 185, had opened the eyes of the Remount Authorities to the number of animals available on the spot, and to the staff of the Cape Depots, already greatly overworked, fell the additional duty of travelling about buying.

Month after month of 1901 passed, and beyond the fact that these depots were congested and the farms full of sick, nothing was really known either of the nature of the diseases infecting them, or of the number of animals attacked. Monthly reports of disease, were called for, and after great delay and difficulty obtained. It may seem hard to inflict further work on already overworked officers, but returns of disease are the only means of feeling the pulse of the army in the Field, without which everything is darkness. These returns let in light; pyæmia came to the front, and the appalling extent of mange was realised. The light-hearted manner in which glanders and mange had been regarded by the Remount Authorities was evidenced by the way they continued to pour thousands of horses from the north every month into the Cape Depots. The result of this was now about to be revealed. These horses for months had been coming from everywhere without inspection; they were turned out without inspection and remained out uninspected. By the middle of the year the returns of disease had made it possible to obtain an insight into the veterinary contents of Remount Depots and Debility Farms. The results were most disquieting. Mallein was directed to be used on the "pyæmic' cases, including those which were reported as having broken out again after being cured! Mallein reactions—frequently a difficulty in South Africa—were in these and similar cases repeatedly described as "not characteristic," or "might be produced by the irritating nature of the fluid." It was evident that the difficulties of mallein had not been studied nor its use fully understood,* nevertheless, between February and August, 1901, 1200 clinical cases of the disease had been destroyed in one depot and its debility annex. It was an earnest of what was to follow. In September Major Blenkinsop, D.S.O., having been appointed S.V.O. Remounts, set to work to clean out this augean stable.

Between September and December he caused

9000	cases of	Glanders
700†	„	Mange
2000	„	Debility, Injuries, etc.

to be destroyed in the Remount Depots and Debility Farms *in Cape Colony alone*, a total of 11,700 destroyed in less than four months!

During the above period, 2000 animals died in addition to the above. As evidence of the mass of disease, it may be mentioned that there were over 7000 cases of mange in these depots and farms in September, and between that date and December, no less than 17,000 cases of mange had been brought under treatment.

One might have thought that this stupendous calamity would have opened the eyes of the officers of the Remount Department, yet the evidence given above by Colonel Darby to the Court of Enquiry was tendered six months after the depots and debility farms of the Cape had been purged, and eight months after the Veterinary Committee sat which decided that the cases of so-called "new sickness" at Johannesburg were glanders in an acute form.

* One C.V. Surgeon with the Remount Department was directed to keep his mallein in the dark and in a cool place. He buried it in the dung pit!

† There died in addition 248 cases of the disease.

Such is the blackest veterinary page in the history of the war. It demonstrates the dangers arising from hiding away large numbers of horses without adequate supervision and inspection, and it shows the want of veterinary organisation. Farms presented a fatally simple means of getting rid of war-worn and debilitated horses. Those with a knowledge of this class of work in the public service knew how easily horses turned out may be overlooked or forgotten, and, in the absence of strict supervision and periodical inspection, are bound to be neglected.

Not only is periodical inspection required to ascertain the progress made by the debilitated, but also to pick out those fit to take the Field again. Hundreds upon hundreds of horses clogged the depots and debility farms during 1901 that ought to have been at the front. Through want of systematic periodical inspection they were overlooked. Inspections are also required for another purpose, *i.e.*, the early detection of disease. Assuming an ideal system had been followed in these debility farms, and every animal carefully inspected on arrival, temporarily isolated, and then turned out when considered safe, even such a system as this does not relieve the administrative and executive officers from the duty of carrying out frequent inspections for the detection of disease and injury. It is the very life of the system, and neglect can only be followed by disaster.

The difficulties in the way of the Veterinary Service with the Remount Department in carrying out a sound system are not regarded as light. There was extraordinary pressure of work at the base on the arrival of horseships; landing and inspection of cargoes; inspection and despatch of animals to the front, and duties in connection with the purchasing of remounts. The farms were scattered over a subcontinent; the railway was unsafe, so that trains only ran during the day, which still further increased the difficulties where economy of time was of the utmost importance. Under these circumstances the tendency to trust to the men on the spot was perhaps natural. Two of these, by dire misfortune, held extraordinary views on the nature of glanders and farcy, and their attitude on the question not only assisted in the spread of disease, but also educated the Remount Department on wrong lines.

The layman interfering in technical matters can always, when he comes to grief, shelter himself behind his ignorance, but no such excuse can be extended to the professional man. The administrative veterinary service with remounts trusted too much to the reports received about the harmlessness of the disease, and leaned too heavily on its subordinates. The logical position in the public service is that if by so doing one comes to the ground, no sympathy can be expected, or error condoned, or there would be an end of all responsibility. The possibly extenuating circumstances we have urged would carry more weight if it could be shown that the debility farm easiest of access to the administrative centre was free from disease. Unfortunately, it was among the worst infected. We again repeat that this work with debility horses had no right to be undertaken by Remounts, who possessed neither the knowledge nor the staff for carrying it out and whose hands were already full to overflowing. It should have been a distinct branch possessing its own lay and technical staff: but it was part of the policy of the Remount Department to allow nothing connected with the horse question to pass into other hands, and it had no belief at the end of 1899 and beginning of 1900, that the trouble foretold by the veterinary service would come true.

Though we have placed on the shoulders of the veterinary service the fullest measure of blame, we cannot shut our eyes to the evil genius of Remounts seen throughout; their light-hearted references to two of the greatest scourges of equine life, and the mixing together, from the first days of the campaign, of healthy and war worn animals, sound the key note to one of the greatest veterinary disasters of modern times.

"Debility" horses might have been found at almost any railway station on the lines of communication awaiting transmission to the remount department. Besides these, in the middle of 1901 collections existed at places provided by local commanders of districts, the existence of which was perhaps not even known to the Remount Department for some time. These places were without organization and under officers selected by the local authority as being for the moment out of employment. It would have required quite a distinct staff to go round and mark down the various collections of derelicts, and a still larger and highly organized staff to look after them. Yet it was of the utmost importance that every horse that could be salved should be.

With the Columns operating in Cape Colony there were depots where horses were taken in for rest and recuperation. All these were under General French and looked after by his officers. They contained many hundreds of debilitated horses, quite apart from those on the special debility farms. Similar centres were started by other Columns, but were at first unauthorised, and sometimes used as a means of hiding away horses against a rainy day, though most of them consisted of animals requiring a rest. Experience showed that these unauthorised collections were frequently bad owing to a want of proper supervision. In principle, the practice of distributing the sick over many small, rather than a few large, centres had much to recommend it, owing to the great difficulty of finding the needful grazing which was the essential factor towards recuperation. Towards the end of 1901 regimental rest camps were authorised for war-tired horses (p. 196), and were an unqualified success, for the Columns were directed to leave men behind in charge of these horses, though the numbers in the Columns were correspondingly reduced. It is unfortunate that this system was not introduced earlier, but there were military difficulties, as at that time Columns could not spare the needful men

to look after them, and without these the horses starved.

One more feature in connection with debility horses may be mentioned. In addition to those kept for recuperation in Remount Depots and Farms, large numbers were sold and found their way to the ports, as no sales were allowed in the interior, after the experience of horses so sold finding their way into the hands of the enemy. These sales at Cape Town gave rise to considerable scandal, both in 1900, as mentioned at p. 139, and again in 1901, and were finally forbidden owing to the cruelty inflicted, and the obviously unfit condition of these animals for work of any kind.

There was a feeling, however, among the civil population of Cape Town that with care and time the horses so rejected would recover, and the Colonial Government was induced to purchase a few hundred with the object of feeding them up, and showing the military authorities what could be done with the *débris* of war. It was not long before they found out, what we had already discovered, that once animals passed beyond a certain stage of debility they would die after lingering some time. The majority of the Colonial Government purchases behaved in this way, and in despair they invited the Chief Veterinary Officer of the Civil Department (Dr. Hutcheon) to give them an opinion as to the best method of dealing with them. His opinion was that the only possible source of profit would lie in the Government buying 100 pigs and feeding them on the horses! This experiment is worth remembering, for the Government which bought these horses as a speculation had no intention of wasting public funds, but believed the investment to be a sound financial proceeding.

OUTBREAK OF CATTLE PLAGUE.

For some time in this History no reference has been made to cattle diseases; this, however, does not signify that the outbreaks of pleuro-pneumonia so frequently referred to at the earlier part of the war, no longer occurred. During the entire period which has been under review, pleuro-pneumonia and redwater were practically never absent, though by means of inoculation the former was kept under control.

We are now compelled to bring cattle disease under notice, as during 1901 the most dreaded of all plagues, "rinderpest," appeared during the height of the military operations previously recorded. It is not known how the disease became introduced. There is reason to believe that isolated cases existed in 1900. At p. 93 there is a note that as early as July, 1900, a disease which could not be distinguished from it was seen on the Zeerust road, among cattle brought in from Bechuanaland, and there were post-mortem examinations held in Pretoria in August of the same year, which were possibly cases of the disease. On 3rd March, 1901, cattle plague was reported in German S.W. Africa, 600 miles north of the Orange River. The fords over this river were accordingly occupied to prevent cattle crossing. On 22nd April there were rumours of the disease in the vicinity of Mafeking; a month later it was reported at Ladybrand in the Free State, and on 6th August it was notified at Aliwal North, in Cape Colony. These latter cases were seen by expert officers of the Civil Veterinary Department of the Cape, who already had vast experience of the disease, so that the diagnosis was no longer doubtful. The anxiety which this outbreak occasioned was confined to the veterinary authorities; the military had seen too much of cattle disease to realise the gravity of the new trouble, and it was only with the greatest difficulty that any measures could be locally adopted to control the outbreak. Such measures are more than difficult in time of peace; in war they are quite impossible. It is obviously impossible to recast at a moment's notice the transport arrangements for troops in the Field, yet on the cessation of all such movements, together with isolation of contacts and destruction of affected, the control of the trouble depends.

By 15th August, 28 cases of the disease had occurred at Aliwal North, and others were reported 15 miles away. At this time there were 8000 Government oxen belonging to the Cape Transport Service, while the total number engaged in military operations throughout the area of the war was no less than 95,700. By 26th August 1000 cattle had been inoculated with bile against the disease at Aliwal under arrangements made with the Civil Government of the Cape, who started a bile station, but the disease was increasing; by this date 149 cases had occurred in Aliwal. At the end of the month the disease had reached native territory in the Transkei, due to loot cattle having been sent there for sale by the military authorities, in spite of the warnings which had been issued and the recommendations made. It may at once be said that in this matter of the movement of cattle, some Staff Officers charged with Transport duties could not be made to understand the extraordinary gravity of the disease; they had seen too much sickness among stock to attach importance to it, and were known to take local advice from the inhabitants instead of being guided by expert opinion. The spread of cattle plague in Cape Colony, and throughout the area of the war, was regarded by the rebel population as a blessing. It might bring the war to a close when other measures failed; even those not rebellious saw in it a prospect of material advantage, for the price of cattle would rise, while the unemployed, with some knowledge of the previous outbreak in the Colony, saw prospective employment as inoculators, and in other ways.* On 14th September the disease had appeared far away on the west of the Colony at Kimberley; by the 25th the animals were dying faster than two veterinary officers (C.V.S's. E. R.

* A man in military employment, an authorised inoculator, was found in 1902 to have sold bile at £10 a bottle!

Edwards† and Jelbart, now Capt. A.V.C.) could collect the bile. This outbreak was believed to be due to rinderpest stock being introduced among Government cattle by the enemy. The disease was also being spread, not only by military movements but by the traffic in bile for inoculation. A trader was convicted of having sold a few ounces for several pounds sterling, though the traffic in rinderpest bile was illegal. Wherever that man went with his bile a focus of infection was established. In spite of the extension of the disease it seemed impossible to impress the Transport Military Authorities with the gravity of affairs. Cattle from the Kimberley district were actually under orders to proceed to Malmesbury, close to Cape Town, a clean district 900 miles away, at a time when no less than 2000 cases of the disease had occurred in the Kimberley district. At Kimberley laymen had been provided with bile by the Transport authorities to inoculate cattle in a clean area! Again, local unskilled advice was acted upon, and even a Dutchman proposed to be placed in charge of a bile station! Dr. Hutcheon, the P.V.O. of the Civil Veterinary Department of the Cape, had warned the military veterinary authorities of the danger of using pure bile for inoculation, and the substitution of glycerinated. This warning had not been disregarded in the Cape excepting by lay authority. The danger of a little knowledge was very evident. A Transport officer at a large centre, learning that bile gave protection, did not realise that it was purely temporary, but believed that the animals so inoculated were "salted," and accordingly of greatly increased value. Animals so protected (?) were sent out with Columns and moved up and down the line, as it was believed they were safe.

By the end of October cattle plague had spread far north of Kimberley, in fact, even north of Mafeking, close to Rhodesia.

While all this was occurring the plague had gained ground elsewhere. In the Orange Free State it rapidly spread north and south from Ladybrand, through the movement of Columns. In the Transvaal both the west and the north were infected by the same means. In fact the whole area of the war was contaminated.

It can be safely said, so far as Cape Colony is concerned, that there were extensions of the disease, due to movements of cattle, which need not have occurred had attention been paid to the elementary principles of prevention urged by the veterinary service. The ignorant Transport conductor, often a Dutchman, the irresponsible advice of casual acquaintances among the civil population, and the prejudice of those who hoped to make something out of it, more often fitted in with the pre conceived notions of the Transport Staff, and were adopted accordingly. Nor was this confined to Cape Colony. The Transport Department at Pretoria was responsible for the spread of disease by means of loot and other stock they wished to dispose of or move—movements wholly unconnected with military operations, and which, therefore, were not of an urgent, or at any rate, imperative nature. Nothing in the above remarks applies to military tactical movements; the whole is directed against movements which were not connected with the operations in hand, and generally amongst that class of cattle most liable to convey infection, *i.e.*, loot and impoverished stock. They are further directed against the unauthorised inoculation of healthy cattle with pure bile, and the utter, and sometimes wilful, disregard of veterinary advice by some members of the Transport Service.

† Now Board of Agriculture.

It takes three months to prepare cattle plague serum; before the end of 1901 serum stations had been established at Aliwal North, Kimberley and Pretoria. A large bile station was also formed in the Free State near the focus of infection. From December the control of the disease became possible. The machinery employed will be dealt with in Part III., but without the skilled assistance of the Civil Veterinary Department of the Cape under Dr. Hutcheon and Mr. Borthwick, and of Drs. Turner and Theiler in the Veterinary Laboratory at Pretoria, it would have been impossible to deal with this scourge, which, be it remembered, was actually fought and controlled in the middle of active operations. This, indeed, is a record, and a triumph of science; it is the highest tribute which can be paid to the genius of Professor Koch.

In the following table the strength in round numbers from March to December, 1901, of the transport oxen in South Africa is given, together with the number of casualties. To appreciate the difficulties of dealing with such a disease as rinderpest in war, it must be remembered that the thousands of animals representing the monthly strength of the transport, were more or less constantly on the move.

	Strength	Deaths
March	66,600	?
April	76,400	1800
May	85,800	3700
June	96,900	7800
July	96,000	10,700
August	95,700	16,200
September	86,700	16,300
October	78,500	14,500
November	73,000	9700
December	71,200	9000

These strengths are of military transport only, the property of the public, and do not include the protection or loot stock, which at times, together with sheep, rose as high as 200,000. These animals, as will be explained in Part III., were placed on various farms throughout the area of hostilities, some eighty places being selected for their accommodation. The mortality amongst this class will never be known.

Over 8% of the transport oxen were dying in June, mainly for want of food, from exposure during midwinter, and pleuro-pneumonia. In July the death

rate was over 11%. In August, when rinderpest had a firm hold everywhere, 16,200 animals died, nearly 17% of the strength; rather more died in September, or roughly 18%; in October it was 17%, and in November and December, at which time an impression had been made on the disease, the mortality fell to under 12%. These appalling figures give some notion of the severity of the outbreak, and the additional work and responsibility cast upon an already over-burdened and small veterinary staff.

During the time we are speaking of, and later, not for one moment was the military position altered by the animal plague which had broken out.* Columns still kept the field, the enemy was pushed and pressed, and the disease in this way carried broadcast over the land. There must have been many animals surviving from the last outbreak whose immunity was still secure, and there were thousands inoculated. The whole of the transport and loot stock, the latter numbering tens of thousands of animals, were protected, the bulk of this work in the Transvaal and Free State being carried out under the supervision of Lt.-Colonel Flintoff and Major Sharp, A.V.D. The special work of the latter officer will be brought to notice in Part III.

* The Commander-in-Chief in his despatch of 3rd Dec., 1901, refers to the military operations of 8th Sept.-8th Oct. being somewhat impeded by the prevalence of cattle plague. He adds that the disease was spreading, likely to make itself felt in every district and to cause great loss. To counteract this, he refers to the measures for inoculation which, by throwing the animals out of work for a week or two, considerably reduced the efficiency of the ox transport for at least a month. In his despatch of the 8th Dec., he says that rinderpest is still raging, but that the process of inoculation and the care taken of uninfected animals have combined to prevent the movements of the troops from being seriously interfered with. In the above despatch he adds that "the successful coping with the disease has surprised the old inhabitants of the country."

1902

ORANGE FREE STATE.

Operations in the South and West.

January-February, 1902.

The last reference to fighting in the Southern Free State was made at p.174. The operations continued to be of the "clearing" character, and later, C. Knox, who still commanded in the south, "drove" up the eastern side on to the block-house line Thabanchu-Ladybrand, but hardly a living thing was met. This observation shows how rinderpest was spread by the movements of Columns, for it was through this area it had travelled from Ladybrand to the Orange River. Meanwhile, matters on the south-western side of the Free State had suddenly become very active, and Rochefort's five columns were sent back (p.174) and raided between Philippolis and the Modder River, though not always with success. The transport of one of his columns was captured and entirely destroyed on 25th December, * and another column, that of Du Moulin, was attacked on the night of 27th January, the camp "rushed," all the horses, 91 in number, lost by fire, together with 120 mules. The losses among the men were correspondingly heavy, and included their gallant leader.

Early in February Rochefort went north from Fauresmith to Boshof, and there combined with Sitwell. The latter had an independent column which raided Griqualand. On 13th January it had a sharp encounter with the enemy 80 miles east of the Modder River, and suffered many casualties. On 5th February it reached Kimberley, and on 16th was again engaged, with many casualities. Rochefort's journey north was due to this, but the opposition disappeared.

Operations in the North-East Free State.

Elliot's Big Drives.

January-March, 1902.

We last saw Elliot's force at Lindley in December, p.177, replenishing after the vain effort to obtain touch with De Wet subsequent to Tweefontein. Elliott was out again in the course of a day or two scouring the oft-travelled road to Reitz; then north towards the Vaal to the block-house line; then back south through the Liebenberg's Vlei. There was no sign of the enemy, and Lindley was again made for, as the troops by now were on reduced rations. He arrived there on 4th January, having covered 60 miles that day, and, in five days marching, had travelled nearly 250 miles. Particular attention is drawn to this remarkable marching, which, as the "Official History" remarks,† is "a feat which the most brilliant rewards have seldom been able to extract from troops, especially under service conditions of such rigour." These marches were not performed by a handful of picked men, but by a mass nearly 5000 strong. Fifty miles a day for five successive days! Supposing that the Cavalry Division under French, which left Ramdam in February, 1900, had been composed of conditioned well-fed horses, what might it not have effected? Elliot's losses from exhaustion in these marches are unknown, they were doubtless heavy. The marches stand out as the most remarkable distance rides under service conditions ever executed by a large body of mounted troops, the difficulties being intensified by an African midsummer. Elliot was a good horsemaster; his subordinate Commanders included men who not only understood this art, but also that of living on an enemy's country.

After only two days' rest for his tired men and horses he once more left Lindley owing to the presence of De Wet, who was moving west to cross the line. The following day, the 8th, De Lisle and Fanshawe came in contact with the enemy; by means of a 50-mile march they retained it, and compelled De Wet to fall back to the east.

Everything now depended on keeping De Wet on the move. Elliot's force required a rest. Byng, who had been resting close to Lindley now moved on Reitz, and was joined by two other columns, Garratt's and Dunlop's, returning from block-house line construction. By 20th January these were massed, and drove up and down the Liebenberg's Vlei, but with no success. Four more columns now appeared: Barker from Winburg, Dawkins from Harrismith, Rawlinson from Standerton, and Rimington from Frankfort. Elliot, in the course of a day or two, was rested and able to move, and the whole mass of columns swept south-east towards the Harrismith-Bethlehem block-houses, Byng being left behind near Reitz.

De Wet all this time was within the area traversed by the troops, and on 1st Feb. intended to move south in the direction of Winburg out of the block-house area. He issued instructions for his Commandos to assemble between Heilbron and Reitz, and a Commando near Byng, in endeavouring

* The "Official History," vol. iv., p. 430, records that three of the native drivers of the transport were shot in cold blood. Some of the prisoners were stripped naked and compelled to walk in this plight more than 30 miles across the burning veldt. Such punishment has to be witnessed to be realized. It was Midsummer, and the sun acts as a cautery on those parts of the body which are always protected.

† Vol. iv., p. 399.

to carry out its orders was attacked with vigour, and the guns taken at Tweefontein re-captured. Meanwhile another drive was being organised, and De Wet and his following were to be driven west by the forces now near Harrismith. Accordingly, the mass then turned about and first deployed along Liebenberg's Vlei for fifty miles, then faced west. On the night of 5th Feb., 9000 men were covering a line 80 miles in length;* their duty now was to maintain this line day and night "over country which was often broken by intricate hills and screened by rushing torrents," constituting "a feat of discipline, endurance and skill, which, as far as we know, is unparalleled in the history of war."† The railway was 50 miles away, and the time to be occupied in searching and driving this strip of country was three days and two nights. The ends of the driving line rested on block-house lines, and were supported by other columns which were to "cut in" as the gigantic crescentic line of horsemen advanced. The railway block-house line had been strengthened by additional infantry, seven armoured trains patrolled it, converting night into day by their search lights, and a battalion of Mounted Infantry lay available to gallop to any point at a moment's notice.

The skill required in bringing this extraordinary military engine into effective being shows what good staff work is capable of effecting. Not only had this mass of horses to be assembled and then spread out so that contact from one end of the line to the other was never lost, but man and horse had to be fed as they stood in line, and the food supply to be on the spot exactly where required.

De Wet and his following of 1800 were in the net; he was accurately informed from without by heliograph of all movements, and his openly expressed contempt for block-house lines was about to be tested. He directed his men to break out where they could. He determined to rush the block-house line. The cordon which surrounded him and his stalwarts on the morning of 6th January consisted of 300 block-houses, seven armoured trains, and 17,000 men,‡ "not one of whom was to be off duty for three days and two nights. ‖

De Wet with 700 men marched south on the 6th while it was light, and by midnight had reached the wire fence of the south (lateral) line of block-houses without arousing suspicion. The pitch dark night served him well; the wires were cut and his whole force was across without the inmates of the block-houses being aware. He was followed by 600 head of cattle which rushed the fence and drew fire with but little loss. He continued his march for 40 miles and reached the Doornberg. The northern (lateral) line of block-houses was burst through by another party who suffered some loss. Meanwhile, on the morning of the 7th, the vast line swept forward towards the railway line of block-houses; as the day wore on the excitement increased, for many of the enemy were known to be in the cordon. As night approached "Precautions were redoubled; every obstacle that ingenuity could invent was improvised; the last reserves of ammunition were distributed and their lavish use enjoined; scarcely a soul slept. All night long without intermission the rifles crackled up and down the line; all night long the searchlights of the armoured trains could be seen to the north and west flashing broad white beams over the dark veldt; and all night long, outnumbered by forty or fifty to one, the peasants of this indomitable district scoured the deadly cordon searching for a hole or cranny of escape, their dark figures silhouetted against the glare of the searchlights."* By the evening of the 8th the total killed, wounded or prisoners numbered 286, but, as we have seen, De Wet was not amongst them.

Elliot's Second Drive, Langverwacht.

February 13th to 27th.

The first drive was barely over when preparations for another on a much larger scale were made. In the first operations only the centre of the North-east Free State had been swept from east to west. The circumference was now to be dealt with. The North-east Free State is an irregular square bounded on the east by the Drakensberg, on the west by the block-housed Free State Railway, and on the north by the Vaal. In the present operations a portion of the Transvaal was included, so that the north line was the block-housed railway running from Johannesburg to Natal. The southern line of the square was the block-house line running from Kroonstad to the Drakensberg. The first movement was to occur south of the block-houses, as far, indeed, as the Doornberg close to Senekal, whither De Wet had proceeded. The space to be swept was 340 miles in length, and varied from 50 to 60 miles in width. Three sides of the square had to be dealt with, swept from opposite corners simultaneously by a northern and southern group of columns. The southern group having reached Harrismith was to line up almost due north and south, and hold the 65 miles of the Wilge River lying between a point 20 miles south-east of Frankfort and Harrismith. The northern group of columns sweeping from the Free State-Johannesburg Railway, on both banks of the Vaal, was to travel east until a point 20 miles south-east of Frankfort had been reached, when the whole line of troops, now 35 miles long, would wheel south, still hugging the Natal Railway up to Paardekop, where additional troops were to join owing to the increasing length of the line. The enemy should

* Roughly the distance from London to Peterborough.

† "Times History," vol. v., p. 471.

‡ "Times History," vol. v., p. 478.

‖ Among Rimington's other instructions to his Column appears the following:—"Every man from the Brigadier to the last native to be on duty, and to act as sentry for one-third of the night."

* "Times History," vol. v., p. 480.

now be contained between the Drakensberg on the east, Elliot and the Wilge on the west, and kept in this area by the southern line of block-houses from Harrismith to Van Reenan's Pass, while the northern group of columns drove them south on to this block-housed line. The latter was temporarily strengthened by six columns and all the permanent troops of the district that could be placed in position. These details are necessary if we are to understand what was expected from the animals, on whose efforts success depended.

The movement began on 14th Feb., the troops having been given a few days' rest after the first drive. In fourteen days the operations were to be completed. The bulk of the work fell to the northern group of columns, represented by Rimington, Byng, Rawlinson, and later, Dixon from Paardekop. The southern group under Elliot consisted of De Lisle, Fanshawe, Holmes, Marshall, Lawley, and Du Cane, the two latter being fresh columns. There is nothing to record of the movements of this vast and complex machine between the 14th and 23rd February. Meanwhile, De Wet, who had retired to the Doornberg after the first drive, had actually re-crossed the block-house line—with loss—and deliberately placed himself within the area cleared by the first drive. The group of southern columns lining up on the Wilge drove him and his force in the direction of Reitz, and here he met President Steyn. "The two watched for a time the oncoming of the tide of troops which lapped without a break over every horizon. Soon they had to be gone, for Elliot was bearing down on the Wilge. On February 22nd they sidled away up the Cornelis River with eyes on every side, falling in continually with groups of burghers who were flying in all directions from one danger to another."* De Wet, who was now enclosed, determined to break out to the north, and with President Steyn and 800 men they forced the cordon of troops on the night of 23rd of February at Kalkrans on the Hol Spruit, at a weak point between the columns of Rimington and Byng. The action is known as *Langverwacht*. The enemy charged through the thin line, rolled it up from end to end sufficiently widely for their purpose, and under a desperate fire the whole mass of 700 men, the Government with De Wet and Steyn, and led horses, got through. They inflicted severe loss on the 7th New Zealand M.I., who lost 58 killed and wounded, while 80 horses belonging to the enemy were lost. De Wet lost everything in the way of transport and cattle. On 27th, the last day of the drive, 778 prisoners, 50 of the enemy killed, 25,000 cattle and 2000 horses were the total result of an operation which will always be remarkable in military annals.

Elliot's Third Drive,

March 4th to 13th.

Three days after the operations last described a further elaborate drive was projected from the point where the various columns had now been brought together. Elliot with nine columns, total 10,000 horses, was to sweep north on a front of 30 miles in a reverse direction to that traversed by the northern group of columns during the last operations, until he reached the Frankfort-Botha Pass block-house line. The other and smaller sections of the force, consisting of 5500 horses, were to march north-west across Elliot's rear and form an oblique line 30 miles long, the left end of which was to rest on Lindley. The second stage in the operations was for Elliot's northern force, now on the block-house line, to turn about and wheel to its right, so that it came into line with the southern force still resting with its extreme left on Lindley. The combined forces were then to advance westward in one long line, Lindley-Frankfort, and close in on the railway. Elliot started north on 4th March, and reached his first position on 8th. The southern column started on the 5th. On the 10th the two forces, now in the second position, moved westward in one long line across the north-east Free State towards the railway. The drive was over on the 13th, and the results were very poor. As early as 5th March De Wet had escaped westward across the railway line, and was now on the opposite side of the Free State. He rushed three block-house lines with but little loss. In front of the driving line on the 10th was one Commando which, on a front of 60 yards, deliberately charged the block-house line, trampled it down and escaped. During the above operations four columns dropped out, being withdrawn during the first stage to strengthen the Western Transvaal forces in a series of disasters yet to be considered.

At the end of the drive, Rawlinson's force was withdrawn to join with Basing's column from the North-west Free State in search of De Wet. Owing to wet weather it had a very bad time after crossing the railway, and found itself at Klerksdorp on 21st March without learning anything of the fugitive.

WESTERN TRANSVAAL.

Yzerspruit, Tweebosch.

February—March, 1902.

We have reached a point in this history when the military operations have undergone a very great change. We have traced them from the time when battles extended over miles, and the backbone of every operation ultimately rested with the infantry. We have seen how the army became transformed from one on its feet to one which was mounted, and some of the difficulties attending so radical a change have been drawn attention to in connection with horse wastage. We have watched the operations become so altered in character that, instead of employing vast bodies of men, numerous almost microscopic forces were the only means of coping with the situation, and finally the employment of hordes of mounted men literally sweeping a sub-Continent in a long thin line. With the

* "Official History," vol. iv., p. 426.

enemy the educative influence of these changes was not neglected. Side by side there grew up in him one equally great; he no longer clung to cover or waited to be attacked, but showed himself with boldness and attacked when it suited his case. Long months of campaigning had given him the confidence which he at first lacked. Mobility he never lost. We have now to see the highest expression of the change in his tactics, the resolute attack of large masses advancing at a fast pace and distracting their enemy by fire from the saddle, and impetuously riding over them.

Every one of the tactical changes evolved during the campaign found its reflex in the altered conditions under which the animals had to serve. It began with a sudden and enormous increase in mounted riflemen untrained to the care of animals. Next followed changes in the artillery, fewer horses being required as guns were reduced in number. Then mobile columns came into play, adding vastly to the number of animals and to the casualties. Later their complement, the block-houses which, by protecting transport, enabled the services of the slower moving ox to be more fully utilised, though later the ravages of rinderpest had seriously affected this admirable source of energy.

The impressive drives wore down vast numbers of animals by the enormous distances covered, while the night raids proved their salvation by allowing the day for feeding and rest. We are now at a period when the day and the night were both utilised for mounted operations of almost unparalleled magnitude. The horse had once more fallen on evil days, and the unmanageable numbers of sick which resulted, looked at first sight as if the veterinary service had learned nothing from over two years experience in the field. It will, however, be shown that the sick resulted from neglect of the elementary fact that horses require time for both food and rest. Though men are saved great physical exertion by being mounted, the greater mobility given them does not decrease the period required by the horse for feeding and recuperation.

We last saw the Western Transvaal in January, (p. 182), where, for the three previous months owing to the activities in the Eastern Transvaal, Orange Free State, and Cape Colony, but few columns had been operating in this area. It suited the tactics of the enemy to burst out and die down, apparently remaining extinguished, but in reality only resting men and horses for fresh efforts later on. The burgher became as weary of Commando as his opponent did of Columns. The one, however, could dissolve at will and rest securely, while the other was kept continuously at work, passing in a day and a night from one theatre of war where his presence was no longer required, to a distant one where the smouldering fire had broken out afresh. Men and horses grow stale under the conditions of continuous warfare. The *élan* and dash of the enemy during the latter stages of the campaign were due to the beneficial effects of rest on both men and horses.

For five months matters had been relatively very quiet in the Western Transvaal, and opportunity was taken to push on with the construction of block-house lines. The latter, in the Western Transvaal, were not so numerous as elsewhere. Pretoria and west for 60 miles was enclosed in a wire fence. Johannesburg, Krugersdorp, Frederickstaad, Potchefstroom, Klerksdorp and Vereeniging lay within another fence. Mafeking, Lichtenburg, Wolmaranstad and Vryburg were points in the circumference of an immense area surrounded by wire, but not sub-divided as had been found necessary in the case of the North-east Free State and the Eastern Transvaal. Practically the whole northern portion of the Western Transvaal was untouched by fencing. The great tilting ground of Methuen and De la Rey, lying between Mafeking and Rustenburg, still lay exposed. The scene of all the subsequent operations in the Western Transvaal was confined to its southern end lying between Lichtenburg in the north, to the Vaal on the south, and from Klerksdorp on the east to Vryburg on the west, roughly a square with sides of 120 miles.

In the early days of February Methuen left the Field. For two years he had been incessantly marching, during which time he had covered some thousands of miles.* The command of the Column now fell to Colonel Von Donop, whose orders were to occupy Wolmaranstad, and using this as a base operate in the surrounding district. Wolmaranstad had to be supplied from Frederickstaad, fifty miles away, and no difficulties were encountered with the first Supply Column which left early in February.

The second Convoy left for Frederickstaad on 25th February, it consisted of 145 mules and 6 ox waggons, with an escort of 480 men, of whom 250 were mounted. On the morning of 25th Feb., the convoy was within fifteen miles of its destination, and had started before dawn with four waggons abreast so as to reduce its length. At this moment it was surrounded by a powerful Commando under De la Rey, who developed the attack at *Yzerspruit* by a volley in the face of the Column, which sent panic-stricken mules to the rear; but the rear was simultaneously attacked, and from both ends a fine defence was made. The enemy, employing the charging tactics, came up over and over again only to be beaten off. But the next stage of De la Rey's scheme had yet to be carried out; he had arranged for a third Commando to strike the flank of the Column, and after some delay it rode up and delivered its attack at the gallop, but was driven off. For two hours longer did the Column hold out, until ammunition failed; 187 men were killed or wounded, 170 horses and 1450 mules killed or captured, and 2 guns lost.

* The late Major Crow, A.V.D., accompanied him in all his marches as S.V.O., until retired for age early in 1902. Like his chief he never tired.

Kekewich was on his way to Klerksdorp, together with Hickie's (now Grenfell's) force, when, at Hartebeestfontein on 25th, he heard of the loss of Von Donop's Convoy. He at once made for Wolmaranstad, which he reached on 28th. He was there joined by Yeomanry sent out from Klerksdorp. A Flying Column under Grenfell, 1823 horses, was also sent north to look for De la Rey. Kekewich evacuated Wolmaranstad and arrived at Klerksdorp on 4th March, and Grenfell after a fruitless search returned to Klerksdorp on the same date.

Lord Methuen at Vryburg, hearing of the disaster to part of his late Column, at once organised a force to attack De la Rey. In view of what occurred, it may be well to say that the force he scraped and raked together was a mixture from fourteen different units, and consisted of Paris' "Kimberley Column" (which we have not met with since the invasion of the Colony by De Wet), together with whatever could be laid hands on, the force eventually numbering 1200, of which 890 were mounted troops, mainly untrained Yeomanry. Attached to Paris' Column was a Mobile Field Veterinary Hospital under Civil Veterinary Surgeon D. T. Tamblyn.° Methuen left Vryburg on 2nd March, travelling north-east through a badly watered part of the Transvaal, and made for a point ten miles south of Wolmaranstad, where he expected the Column under Grenfell to meet him. On the 6th March, Methuen had arrived at his camp at *Tweebosch*, lying in the angle formed by the Great and Little Hartz River. He was still 25 miles south of his objective, and, though he did not know it, Grenfell was 36 miles south-east of him. Between Grenfell and Methuen was De la Rey with a powerful Commando.

On Jan. 7th Methuen's Column moved forward, the transport being in front (the ox before the mule in order to regulate the pace). An attack from the rear was expected, Methuen having been warned the previous day that De la Rey was in the vicinity. It was still dark, and for two hours the slowly moving mass crawled along. Behind was De la Rey with 2000 men, probably the pick of the Federal Forces, following stealthily in its tracks, and waiting for the first streak of dawn. At 5 a.m. a crash of musketry burst on the rear and flanks of the Column, the ox waggons were halted, and the mule waggons directed to close up, but the majority dashing ahead passed the ox convoy and went racing over the level and unbroken veldt away to the north. Nor was this the only panic; the bulk of the mounted troops guarding the flanks and rear also galloped forward and deserted the guns and convoy,† and the enemy galloping down in their new style poured a terrific fire into the mass from both sides. The gunners who had opened fire were ridden down and destroyed to a man. Around the ox waggons Methuen placed his infantry, and for two hours these sustained an unequal combat under the inspiring influence of their General. Another small portion of the force, composed of stalwarts, took up a position under Paris in a Kraal about a mile ahead. The fight raged at point blank range, and when the Northumberland Fusiliers ran short of ammunition, an unknown man,* bearing a charmed life, made several trips with boxes of ammunition from the waggons, and distributed it along the bullet-swept line. It was Civil Veterinary Surgeon Tamblyn.† The party of forty in the kraal fought on after the Convoy had succumbed, and nothing but field guns compelled them to yield, their defences being knocked to pieces by shell fire. In five hours nothing remained of this Column but the killed, wounded, and prisoners (68 dead, 132 wounded), 240 horses were also killed and wounded.

Then followed acts of murder which had become all too common; native drivers were shot, and the whole Indian and Kaffir establishment of the Field Veterinary Hospital were butchered. One Farrier Sergeant of Indian Native Cavalry and two Indian Veterinary Assistants (men carrying no arms) were ruthlessly shot dead after the surrender, and nine Hospital Kaffirs were either killed in action or murdered later.‡

We have entered more fully than usual into the account of this disaster, not only from its intrinsic interest to the veterinary service, but also from the fact that it created a feeling well nigh to consternation, and determined the Commander-in-Chief to concentrate his forces in the Western Transvaal in order to exact reprisals. Henceforth, Klerksdorp was to be the busiest place in any theatre of the war; the action of Tweebosch had shifted the whole centre of gravity of the campaign.

Grenfell knew nothing of the disaster at Tweebosch until the following day; he then fell back on Lichtenburg in case the garrison there should suffer the same fate. But De la Rey went south and met Steyn and De Wet (who had just passed through the ordeal related at p. 211) at a point between Wolmaranstad and Klerksdorp.

° A Canadian Graduate, now Dept. of Agric., Canada.

† "Of the panic of the majority of the mounted troops, lack of training, insufficiency and inexperience of officers, and above all the heterogenous nature of their composition were the main causes."—"Official History," vol. iv., p. 420.

* See *Standard*, 14th April, 1902, whose correspondent describes this gallant act as being performed by a "veterinary surgeon whose name I failed to gather."

† Had this action been successful, it can hardly be doubted that C.V.S. Tamblyn's devotion would have been suitably rewarded. Two horses were killed under him early in the fight, and he was captured but escaped, to be again taken at the surrender.

‡ General De la Rey, the most chivalrous of foes, was in no way responsible for these acts of murder. His young men were the offenders, and it was impossible for him to be in all parts of the field at the same moment. That he knew of the tendency is certain, for the "Times History," vol. v., p. 507, records the fact that he flogged several of his men for rough treatment of prisoners captured at Yzer Spruit. It also states that while he was talking to Methuen, who was then lying severely wounded, a burgher began to remove the gaiter from the unwounded leg under the eye of De la Rey, who personally and forcibly intervened. We have also seen, at p. 180 of this History, what occurred at *Kleinfontein* at the hands of the same men.

ORANGE FREE STATE.

Operations March-April, 1902.

Elliot's Further Drives.

The drive by Elliot obliquely across the Free State which terminated on 11th March was not the last, in spite of its relative unproductiveness. Five columns, Elliot, Barker, Garret, Rimington and Nixon, containing 12,000 horses, were to sweep across the Free State from west to east in one long line, each end touching the block-house lines, which were fifty miles apart. The movement was to be deliberate, and there were no long marches. The operations after passing the Liebensberg Vlei—which is the long central gutter of the north-east Free State lying between Frankfort and Bethlehem—were to depart from the usual programme. A force was to go ahead, followed by a second, these were to do the needful pounding, while a third in the rear was to act as a net, and prevent all escape by closing in up to the Drakensberg and compelling fight or capture.

As early as the sixth day after the previous drive the troops were getting into position, a very short rest for leg-weary horses, and the general operations started on the 19th March. The advance was made from the line Heilbron-Doorncloof, points nearly forty miles apart. Heavy rain night and day did not promise well for the conditions likely to be met with at the foot of the Drakensberg Watershed, which was 100 miles away, and where the operations were to terminate. By the 26th March all but one of the columns was lying between the Liebensberg Vlei and the Wilge River, now both roaring torrents. No means existed for bridging the river. The one column on the eastern bank of the Wilje could not advance without support, and moreover could get no food until supplies reached them by improvised raft on the 28th. The condition of the horses during this time was seriously affected. Rain and cold on empty stomachs made many victims. The Wilge did not fall until 1st April; in the meantime the enemy had had four days in which to scatter. The passage of the river was mainly by swimming, while the transport had to go miles out of its way to cross by the few existing bridges. On the 2nd April it was known that the enemy intended to break through the cordon that night. It was pitch dark and raining, and for some hours before midnight hoof sounds were heard which drew fire; to patrol was impossible. A wire fence ran along the front of the line. "Suddenly at 1 a.m. two trumpets rang out close in front of the line, and immediately after a mob of mingled Boers and cattle burst against the wires and endeavoured to force a breach. The stout strands, and the heavy fire which poured through them were two much for many of the Boers; but at one place in the fence the weight was irresistible. The wires snapped, the nearest picquet was swept away, and some hundreds of horsemen poured over the place and galloped westward into freedom." * The results of this drive, which terminated on 5th April, were very disappointing, 76 prisoners and 4800 cattle and horses.

The Columns were now dispersed, those of Nixon and Garret went north, crossed the Vaal and joined B. Hamilton in the Eastern Transvaal, Nixon being sharply attacked before he crossed the river. Elliot proceeded to Harrismith, and from there his Column under Barker marched to Frankfort; Elliot with his remaining Columns traversed the country north-west, passing between Reitz and Bethlehem. He was attacked on this journey, and reached Lindley on 21st April after a month's hard work.

On arriving at Lindley, instead of getting rest the Columns were ordered to march back and make Bethlehem their headquarters, with a view to clearing the Brandwater basin which was now a source of trouble. A week of reconnaissance followed in this mountainous region, at the end of which time Elliot was withdrawn for a combined drive under Bruce Hamilton which we will mention later.

Attention is directed to the continuous work performed by these Columns under Elliot. On the basis of all previous observation it would result in 3000 sick horses a month; as a matter of fact the inefficiency would be below this, for the work was relatively steady, and the general returns of sick were already showing a reduction in numbers. Nevertheless the number of sick was enormous. There were 31,000 horses employed by the thirty Columns alone operating in the Free State, and at the lowest estimate these must have furnished 6000 sick horses a month, including 1,500 died and destroyed. In addition to furnishing a veterinary service for the care of this multitude of sick, it must not be forgotten that rinderpest was still rife and pleuro-pneumonia ever present. Tens of thousands of animals had to be inoculated against these diseases.

CAPE COLONY.

Operations January-May, 1902.

The operations described at p. 181 had relieved a great deal of the anxiety felt for the safety of Cape Town, but the situation was by no means satisfactory. Maritz had been driven towards the north-west, but Smuts was present in supreme command, and was unlikely to take quietly the rebuff his schemes had experienced in the Cape Peninsula. In order to deal with him and his Commandos the long block-house line from Victoria West to Lambert's Bay was projected. The matter has been referred to at p. 181 as one of the most remarkable undertakings in this class of work; 320 miles of wire fencing and block-houses were to be constructed through districts little better than a desert. The line we have seen was begun at both ends simultaneously, and pressed forward with such rapidity that in a fortnight Lambert's Bay had been

* "Times History," volume v.

connected with Clanwilliam, and had thus interposed an obstacle on the road to Cape Town. At the Victoria Road end matters were slower, the constructional difficulties being due to the unsuitability of the animals employed in transporting the material. The country consists of karoo bush and sand, it is sparsely populated owing to its small rainfall; there sheep and goats thrive, but cattle die, and the only animal used for transport purposes is the donkey. A donkey convoy is excellent if given time, but it must move at its own pace, and that was considered to be too slow to meet the urgency of construction. Ox transport was therefore introduced into a country where no keep for oxen exists, and a large depot was established at Victoria West. It will be more convenient to look at this depot after describing the operations which took place during the construction of the block-house line.

The wire fence from Victoria West to Lambert's Bay was north of the Cape Town railway, and generally speaking about 130 miles away from it. Smuts could see that if erected it would help to deny him access to a piece of country 320 miles long by 130 wide, but he also knew that if it were to be constructed the Columns protecting it could only be fed from depots established much nearer to the scene of operations than those on the Cape Town railway. Such depots were established at Calvinia, Sutherland and Fraserburg, and were being filled up by convoys protected by the various Columns. In the western part of the area were the Columns of Wyndham and Kavanagh at Clanwilliam, and that of W. Doran, lying in an entrenched camp midway between Sutherland and Calvinia. At the eastern end were the Columns of Crabbe, Lund, Capper and B. Doran. While Clanwilliam was busy filling up Calvinia, the Columns engaged in this operation were repeatedly attacked during February by Smuts. On the 5th February W. Doran left his camp to attack a party of the enemy, and with difficulty held his own; on returning to camp he found it had been attacked during his absence, and all his waggons burned, though he arrived in time to save his mules. So considerable were his losses that he had to return to the line to refit Sutherland was filled up by a convoy under Lund which followed Capper, and both entered the place on 25th January. Crabbe was to provision Fraserburg, and at this moment was filling up with supplies at Beaufort West. The enemy under Malan was lying between Sutherland and Fraserburg, and denying the road to the latter place. Crabbe left Beaufort West, and on nearing Fraserburg on 3rd February he, for safety, left his convoy of 100 waggons behind him. His convoy was destroyed on 5th, while he suffered heavy loss and was saved from possible obliteration by the arrival of Capper and Lund from Sutherland. All the animals in his donkey convoy were lost, and he returned to the line to refit.

The operations just referred to were part of the counterstroke devised by Smuts. He had massed some of his Commandos against the Clanwilliam group; these were under his personal command. Others under Malan he had placed between Sutherland and Fraserburg, while a force under Maritz had been sent 280 miles to the far north-west to attack Ookeip in Namaqualand. The latter does not concern us at present. It was now decided to "drive" the space containing the forces of Malan, and four Columns set out from the railway north of Beaufort West at various periods between the 17th and 23rd February, and drove for 100 miles towards the wire fence, Williston-Carnarvon-Victoria West. They cleared the area between Williston and Victoria West. The Commandos either breaking out north through the fence, or keeping within it, doubled east, attacked the block-housed railway and crossed the line, thus entering once more the midland area. The party under Malan accomplished this on 21st February, and was at once followed for several days by the Columns of Wormald. On 1st March, Wormald was relieved by B. Doran who, for a fortnight, continued the chase of Malan up and down the midlands, when he had to go to the line for rest and supplies. Malan also needed a rest and retired to the old haven of refuge in the Camdeboo Mountains. Here he met Fouché and Wessels, who were being chased by other Columns from the north-east, and the result of this meeting will be noted later.

During the remainder of the war the Columns north of the Cape Town railway were mainly engaged in keeping the block-housed area clear of Commandos. Capper, holding a central position at Williston, was frequently engaged during March and April pushing back L. Wessels and Theron. Prieska, to the north of the block-house line. This place, simmering with rebellion, harboured a large force of the enemy which constantly interfered with convoys from De Aar, so that in March W. Doran and Younghusband had to act together to clear the road. In the vicinity of Richmond Road Station, Berwick-Copley and Wormald were engaged keeping Commandos at a distance. In fact the Columns north of the Cape Town railway were mainly occupied in looking after the long wire fence, not inaptly compared to the Great Wall of China. *

* The "Times History," vol. v., p. 542, speaks very lightly of the value of this line. It says, "We may briefly remind the reader that the great length of this line, the remoteness of the country it traversed, and the fact that it only touched a railway at one end rendered it of little value, while its construction, necessitating several covering columns, and a large part of the already indequate transport, caused much embarrassment to the active operations which it was meant eventually to assist. Not completely finished by May, 1902, it was never efficacious either as a barrier or as a line of supply."

THE VETERINARY HISTORY OF THE VICTORIA WEST BLOCKHOUSE LINE.

The construction of the blockhouse line gave rise to important veterinary conditions. Donkey transport is used in the Karoo, for as we have seen, no grazing exists for cattle, while the donkey lives on the bush. In order to press on with the construction of the line, the urgency of which may be gathered from the previous account of the military operations, ox transport was introduced, and from that moment trouble began. The cattle came by rail from the Eastern Provinces of Cape Colony, from a part not affected with cattle plague, and were railed to Victoria Road, which to them was practically a desert. Cattle plague was still rife around and north of Kimberley, and in the vicinity of Aliwal North, so that special provision was made at Victoria Road for dealing with an outbreak of disease.

One thing perfectly clear was that if the animals carried to Victoria Road were free from plague, it was certain they could not contract it at that place, or on the blockhouse line to Carnarvon, as no other cattle existed in the country. This essential fact seems to have been overlooked by the Veterinary Staff on the spot, though it was the key to the position; its nervous apprehension was the cause of untold trouble to the Senior Veterinary Officer of the Colony, 400 miles away, and of anxiety to the military authorities. As an example of administrative difficulty, an outline of the story will be related.

From Victoria West to Carnarvon is 70 miles, and by January this section of the line was completed. Carnarvon now became blockhouse-head for the construction of the section to Williston. This work began in February, there being 3000 oxen employed, and at blockhouse head a lay Inspector of Cattle was posted. The man had considerable experience of cattle plague. On 10th March he reported the existence of the disease at Carnarvon in a "mild form," and in his telegram undertook to "soon stamp out with serum." The man had blundered, but his report proved alarming to the military authorities, for come what might, the line had to be constructed. The scare created by this baseless story never really subsided, a feeling of insecurity was established, and this was subsequently intensified by the errors of the local Veterinary Staff.

The real cause of the mortality on the Carnarvon section was starvation. This was equally evident among the animals at the Victoria Road end. Early in March 7500 cattle were being employed, and with an increase in numbers there was an increase in mortality. On 15th March the deaths were declared by a Civil Veterinary Surgeon to be due to cattle plague, and once more there was an outbreak of official anxiety, cries for serum, orders and counter-orders by irresponsible Transport Officers, and others. It was with difficulty among all the tumult, and the interference by incompetent and unauthorised people, that the Senior Veterinary Officer, the sole responsible man, could make his voice heard. He made the positive statement, based on an inspection of the cattle and post-mortem examination of fatal cases, that the disease did not exist, and that the deaths were due to "redwater" and starvation. By 25th March there were no less than 10,000 oxen employed on the line, and how they existed is a mystery, for of grazing there was practically none; the question of a daily ration had long been pressed on the military authorities, but it was not until the 7th April that one was sanctioned, consisting of 10lb. hay and 5lb. mealie meal per head. Day by day the cattle were getting weaker; at one time they could do the journey to Carnarvon in four days, they now required nine. A third rinderpest scare at this time did not help matters. The transport authorities ordered the inoculation of cattle which were dying daily from other causes, and so wasted some thousands of doses of the invaluable serum which had taken three months to prepare. This was a grievous loss at such a critical time, with rinderpest to the North and East. Still worse was the risk of contaminated bile, which was being sent in by the Transport Department from infected areas, and used without reference to the S.V.O. No better measures could have been devised, short of sending infected cattle, for introducing the disease into what was still a clean area. Considering the extraordinary military urgency of the situation, it is not perhaps to be wondered at that the authorities adopted this ignorant measure, for which the Veterinary Staff on the spot must be held responsible; nevertheless, it is by no means clear why the responsible military veterinary adviser in the Colony was not consulted before adopting a course so full of danger. He practically stood alone in his attitude towards the disease, and in opposition to the steps taken by the Transport Service; he showed that starvation, and not cattle plague, was killing the animals, and the Civil Veterinary Department of the Cape, whose interests in this matter were enormous, were able by independent inspection of the affected to support this view. When cattle plague began to be discredited, the local veterinary staff fell back upon anthrax as the cause of the mortality; it was little short of extraordinary that every cause but the real one of starvation was being searched for. It must be remembered, however, that with one exception, the veterinary staff at Victoria Road had no experience of rinderpest, and were naturally nervous and anxious at the heavy mortality occurring, which still continued, for the food sanctioned on the 7th April came too late to be of much use. Making every allowance for its want of experience, there was also evidence of a strong inclination to stick to a mistake.

It is interesting to place on record that the experimental evidence finally relied upon by the Victoria Road staff as proof of the existence of rinderpest, was based on the inoculation of a calf,

which, at 48 hours, showed a rise in temperature and diarrhœa. Without waiting for something more definite, cattle plague on this evidence was reported to exist, though the calf was well in a day or two, and so remained. *Sparrows* also had been inoculated, and as all died in less than forty-eight hours (from being shut up in a cage), there seemed to be no doubt in the mind of the experimenter of the correctness of his conclusions! It is remarkable that any mind could have harboured such absurdities, and regarded the above observations as proof of the existence of pestilence. Perhaps one ought not, under the circumstances, to wonder at the attitude of the military authorities. These facts are mentioned as evidence of the difficulties on service of always having the right men on the spot. It frequently happens that by accident the gravest responsibility falls on the weakest vessels, and that the reputation of a whole department may depend on their action or advice.

The debility farm of the Victoria Road depot was a few miles away, and contained 1400 cattle in all stages of decay and neglect. It was wet weather, and the worst cases after a cold night were unable to rise. They were quite free from any signs of rinderpest, but there was ample evidence for the necessity of some improvement in their management. The dead were receiving superficial burial by the dam which furnished the only source of water supply; the forage was unprotected, and among the bales the debilitated cattle crawled in for their last meal, and several lay there dying. The hay was soiled by their excreta, and for some distance around this mound of forage the ground consisted of mud and trampled-in hay, after the latter had been brought immense distances and at vast expense. The food, sanctioned too late to the working oxen, had of necessity to be thrown on the ground as there were no feeding places. Hay and meal alike were swallowed up in the mud, or blown away with the dust. Before the end of May the deaths in one week amounted to over 1200. The ox transport was destroyed; on 14th May steam had to take its place, and donkeys were now employed. By July the few cattle survivors were railed south; in a seven hours' journey 15 died in the train, and the balance was thereupon detrained as "suspected." Once more the veterinary staff called in pronounced the disease to be rinderpest, but the war was over, and only the civil authorities were now anxious, and their veterinary staff fortunately had full knowledge of the previous facts of the case. The blunders over these cattle were extraordinary, and those committed by the veterinary service ought never to have occurred. We may conclude the story by saying that practically none of the animals survived. When the railway was found too rough for these poor starved remnants, an attempt was made to march the remainder away at their own pace, but they died on the road, and a mere handful reached their destination.

It seems hardly necessary to point out the lessons which the above teaches. The same blunders in employing the wrong class of transport animal might occur to-morrow; the same folly of trying to get the animals to live without food; but never again, let us hope, will the same veterinary ineptitude be exhibited.

In the north-east of Cape Colony Fouché was still supreme. Follett had advanced from Dordrecht against him and P. Wessels at the end of December, but without result. Monro and Lovat, combined with Follett in January, and on 11th made another attempt: contact was established with Fouché, who, after inflicting many casualties on 17th Lancers escaped. Meanwhile L. Wessels went south-west, crossed the line, followed by Price with the Kaffrarian Rifles, and got into the stronghold of the Bamboos Berg. Fouché now being isolated, five columns "drove" for him but he disappeared. L. Wessels in the Bamboos Berg was hunted by Price, but managed to escape, recrossed the blockhouse line and rejoined Fouché. On 17th February the two were in the vicinity of Jamestown. From here both Commandants again entered the midlands, crossing the blockhouse line on 28th February, and Price and Monro's mounted troops under Baillie went in pursuit. The chase lasted nearly three weeks. Price, who knew the country, was rarely off Fouché's heels and attacked him whenever possible. Fouché's Commando broke up under pressure, one half led by himself went south and was followed by Price, the other, under Bezuidenhaut, was followed by Baillie. Fouché, in his southerly run, reached Jansenville on 16th March, bounded west across the Graaf Reinet line, and then made north for the Camdeboo as hard as he could go with Price on his heels. He finally gained the security of the mountains south-west of Graaf Reinet after a chase of not less than 260 miles. In the Camdeboo he met Malan.

Baillie fared no better with Bezuidenhaut, who, in his journey, described a circle of about 180 miles in circumference, which brought him back to the Bamboos Berg quite close to where he started. On 2nd April he crossed the line east and made for the Jamestown District followed by Moore and Lovat. Hunted here by Lovat, he was, by the end of April, owing to the loss of men and equipment, reduced to impotence, though never captured.

CAPE COLONY.

THE LAST CHASE OF THE WAR.

MARCH TO MAY, 1902.

By 26th March, B. Doran having refitted, combined with Price in a sweep of the Camdeboo Mountains in quest of Fouché and Malan. The enemy was driven from position to position, and finally by the end of the month ousted in small parties to the west into the Murraysburg district. Two sweeps of this district by four columns took place in April, including the Camdeboo Mountains, but without result.

Fouché and Malan represented a combination of extraordinary difficulty, such as might have been anticipated from the previous history of the chase after them. They were both specially marked for capture or destruction, and it will be of interest, as evidence of the work this class of operation imposed upon the horses, to know the measures which were taken in the last days of the war to endeavour to effect this.

It began by another series of sweeps over the Camdeboo Mountains. To and fro from Nelspoort to New Bethesda was this mountain range swept in May by Baillie and Doran, but still with negative results.

B. Doran was now joined by a fresh column under Bewicke-Copley, and other troops were brought in to assist, but before the reinforcements arrived Malan and Fouché left the Camdeboo Mountains and went south for Aberdeen, which they unsuccessfully attacked on 18th May. Now began a chase as remarkable for the endurance, courage and determination of the fugitives, as for the extraordinary efforts put forth to effect their capture.

Imagine an irregularly semi-circular course, 240 miles in length, over mountains and sandy plains, intersected by two lines of rail, and heavily blockhoused near the winning post, the latter being the ground north of the Bamboos Berg.

Following the fugitive band are the columns of Lovat, Bewicke-Copley, B. Doran and W. Doran, sometimes in hot pursuit, at others cutting off corners to intercept, while bodies of mobile and local troops are stationed here and there, as the scene shifts, to intercept or prevent breaking back or breaking out from the enormously strong position which has been prepared to receive them. This latter is the objective, and to it they have to be driven. At first they go south, but gradually are moved in a large semi-circle until their heads are pointing in the required direction, north-east. On 20th Lovat reaches them, and has a fight which costs them 100 horses, but away go the Commandos with a column on each flank to contain them, another behind to keep them on the move, a fourth on the line of rail ready to steam to a distant point and intercept. The time for the latter arrives on the 27th, B. Doran being sent ahead by train. He reaches a point on the line of rail for which the fugitives are rapidly making. The crossing being denied them, the Commandos try to break back through Lovat; the latter closes, and in the encounter Malan is severely wounded and captured, while the remnant of the band streams away north in spite of the presence of B. Doran and an armoured train patrolling the track. The harrassed Commandos cross the line on 28th May, and speed through Bedford, cross the Winterberg Mountains, and approach Taarkastad, but are blocked by Lukin, while a break out to the east is provided against by troops on the East London line.

The end is approaching, for the Commandos are near to the Bamboos Berg through which it is intended to drive them on to the railway, now consisting of an impenetrable wall of blockhouses. To prevent a possible break out to the west, the 2nd Dragoons are waiting at Maraisburg; should they get through this, another mobile body lies behind them, and exclusive of these a further blockhoused line lined for 100 miles by troops. The position for the fugitives is hopeless; the Bamboos Berg are now in sight and the end at hand, but with it came June 1st. The war was over.

The number of columns which took part in the operations in Cape Colony, January to May, was twenty, consisting of 11,000 horses. The casualties were very heavy, and hospitals were established at Clanwilliam, Sutherland, Piquetberg Road, Magersfontein, Carnarvon and Victoria Road, in addition to those previously existing, including the large debility establishment at Worcester, into which the cases were poured by tens of hundreds. As giving some notion of the amount of sickness, there were over 2000 sick animals at Worcester, of which 1500 were suffering from scabies and debility. We may say that at the lowest estimate the operations recorded above resulted in a loss of 2700 animals per month, of which 600 died or were destroyed.

THE NAMAQUALAND OPERATIONS.

JANUARY-MAY, 1902.

It will be remembered that the scheme of Smuts not only included an attack on the advanced bases being held in the wired-in districts to the north of the Cape Town line, but also a descent on the north-west territory of the Cape. This introduces us to the far away inhospitable regions of Namaqualand and Kenhart, to which a force under Maritz had been despatched. Ookiep, the capital of Namaqualand, was a place of importance owing to the copper mining industry, and was connected with the sea at Port Nalloth by means of a line of rail thirty miles long which ran through an absolute desert. Ookiep was of value to the enemy owing to the immense capital its mines represented. To reach it was a long journey for him, but all through a friendly country, for nowhere more than in these wild desolate sparsely populated northern regions was the hatred of everything British more firmly rooted.

This feeling had been shown early in the war, pp. 61 and 164. Though measures had then been taken to deal from the east with the territory as far as Upington, it was not possible until August, 1901, to form a mobile column for the purpose of maintaining order. This columh was under Col. White, and what it accomplished in the way of marches in the desert area contained within the vast triangle, Ookiep-Upington-Van Rhyn's Dorp, has never been described. His opponents were all rebels more bent on thieving than fighting. In January, 1902, White was at Kenhart, where he had been engaged with the enemy. Hearing of the mission of Maritz, he hurried across to stand between him and Ookiep, but Maritz got behind him, and White, now at

Garies, unable to move to Ookiep, would have fallen into the hands of Maritz but for the services of a small regular and local force which had placed Garies in a state of defence. The subsequent attack on and defence of Ookiep does not concern us, but its relief was effected from Cape Town, troops being sent by sea to Port Nolloth and railed across the desert. The town was invested by the enemy on 31st March, 1902, by which time Smuts had arrived. It was relieved by Colonel Cooper on 4th May, the mounted troops with him being under Callwell.*

White at Garies was relieved by Kavanagh's column from Calvinia; Wyndham's column was established at Van Rhyn's Dorp, while Smuts proceeded to Vereeniging to discuss terms of peace.

EASTERN TRANSVAAL.

Boschman's Kop.

Operations: April, 1902.

The area to the east of Pretoria, described at p. 168 as protected, was the scene of military operations during April. The term "protected" had become a misnomer, for since the previous January it had been the home of a Commando under P. Viljoen (see p. 183), and in February, during one of the Free State drives, General Alberts from the Free State with 500 men had joined him. All endeavours to oust these Commandos from the protected area had been uniformly unsuccessful. In December, 1901, Gilbert Hamilton with a Cavalry Brigade suffered reverses, and again in February it was roughly handled. Since then these Commandos had moved about the protected area enjoying complete immunity. Though in strength about 1200, this district for many weeks was able to provide subsistence for this number of horses and men, yet a single British squadron would, under like conditions, have starved in a week. As the "Times History" says, how these people lived was a mystery. "The country was a wilderness; not a beast, not a field of standing corn, not a native was left. Some trampled mealie fields offering a niggardly harvest to very careful gleaners were the only signs of sustenance."† There must have been hidden supplies of food available for both horse and man.

On 2nd April another attempt was made to deal with these Commandos. Lawley, who had taken the place of G. Hamilton, brought with him from the Free State the 7th Hussars and 2nd Dragoon Guards. On 31st March he was at *Boschmans Kop*, 18 miles south-east of Springs. The following morning before daylight he sent out the 2nd Dragoon Guards, 300 horses strong, to surprise a piquet of the enemy, 12 miles east. It was a dark wet morning; the regiment walked into the arms of a Commando 800 strong, which was as much surprised as they. The Commando soon rallied, and adopting their modern tactics charged boldly up to the squadrons at point blank range, also endeavouring to cut them off from their base. The last seven miles to camp was across a level plain where no defensive position could be found, so it resolved itself into a neck and neck race. As they neared their camp the Artillery opened fire, the 7th Hussars came out and the enemy then withdrew. The losses were over 80 horses and men, and at one time the whole regiment was in peril.

It was evident that in spite of the harrowing to which this State had been subjected, the spirit of resistance was still there, and another drive across the Eastern Transvaal was inaugurated by Bruce Hamilton, whose seven Columns, totalling 7000 mounted men, were drawn up in a line from Great Oliphants Station to Carolina, points 60 miles apart. From here on 12th April they "drove" south to the Standerton line which was reached on 14th, the distance apart of the two lines is 80 miles, so that 40-mile marches were made. The enemy met these columns by "charging" tactics," so that men literally smashed a way through the solid rank, with very little loss excepting in prisoners.*

When B. Hamilton arrived at the Standerton line he was joined by four columns which had just left Elliot's big drive in the Orange Free State, p. 214. With eight columns he swept back on 17th April to the Delagoa line, thereby going from south to north, taking a course just west of his previous drive. But the fruits of this enormously expensive operation were three prisoners; the Commandos of P. Viljoen and Alberts escaped, the enemy having broken away to one flank and got clear. On the 23rd April a third of these cross sweeps was made, a little further west so as to touch Heidelburg on the Natal line, but only four prisoners resulted from this operation.

It is impossible for the civilian to realise what each "drive" meant to animals and men. "Each day, in rain or wind, or under tropical sun, they marched from dawn to dusk, each night they dug entrenchments, and strung up leagues of barbed wire entanglements before they lay down in the open, to the brief rest which many, from the necessity of finding innumerable outposts, never obtained at all."† If it was fatiguing to the men who rode, what must it have been to the horses who carried them? In all the above drives the piece of country to be swept was roughly 80 miles in length by thirty to fifty in width; so that it resolved itself into marches of forty miles a day for two days, then two or three days rest, followed by two more long marches.

At this time in the Eastern Transvaal there were 19 columns operating, of an aggregate strength of

* The Veterinary Officer with Colonel Callwell was C.V.S. (now Captain) Greenfield.

† Vol. v., p. 562.

* "Official History," vol. iv., p. 520.

† "Official History," vol. iv., p. 521.

14,000 horses, and the wastage may be taken as follows:—There were nearly 3000 sick horses a month for the veterinary hospitals in that part of the colony, or to be drafted away to debility farms, and 700 horses a month either died or had to be destroyed.

ORANGE FREE STATE.

Operations: May, 1902.

The Last Drive.

When B. Hamilton had completed the work in the Eastern Transvaal just related, he crossed the Vaal into the Orange Free State, and in co-operation with Elliot a big sweep was organised. Before reaching the Vaal he drove from Greylingstad on 2nd May, on a line extending to Vereeniging, and continued it up to the northern blockhouse line of the north-east Free State, *i.e.*, Heilbron-Frankfort, which was reached on the 4th. The Eastern outlet lying between Villiersdorp and Frankfort, a space of 20 miles, was closed by Allenby. The results of the drive were that many of the fugitives broke through the blockhouse line, and some through Allenby's; but 90 were captured. In the next phase of this operation Elliot lined up from Lindley to Liebensberg's Vlei, and Barker filled in the space between Frankfort and Elliot's right. From the northern line of blockhouses B. Hamilton drove south on 5th May, his line of eight columns extending 60 miles in length, and consisting of 11,800 horses. The distance from his objective—the Kroonstad-Lindley blockhouse line—was 40 miles, and this was covered in two days. On 6th the enemy boldly charged Elliot's line, and burst through with the loss of only one man and twenty-five horses. A little later another party failed to get through and was captured, so that 300 prisoners were secured by the time the blockhouse line was reached.

The following day, 7th May, B. Hamilton turned about and drove north over the same ground. The driving line was here in parts prolonged to 80 miles, from the railway to the Wilge River. It may be visualised by thinking of the distance from London to Rugby. Two parties of the enemy broke back, and on the evening of the 9th the drive ended. With it terminated the last operations in the Free State, for on 10th, pending peace negotiations, all further offensive action was stayed.

It cannot fail to strike those who have had the patience to follow the two years of weary operations in the north-east Free State, the losses a small and determined enemy is capable of inflicting, provided they possess superior mobility. It would be interesting to know what our losses in animals were during that time! Fire, sword and pestilence are active and efficient methods of destruction, but for the general obliteration of animals, physical unfitness will compete with them.

WESTERN TRANSVAAL.

Operations: March-May, 1902.

The serious turn taken by the events in the Western Transvaal recorded at p. 213 led to a great concentration of troops at Klerksdorp, which now formed the base of all future operations. Grenfell, who was close to Lichtenburg, was recalled to Klerksdorp, and his column, together with that of Von Donop, was placed under Kekewich; it numbered 2800 horses. Rawlinson, who had followed De Wet and Steyn, p. 211, was brought in from the Free State with his entire force of 2000 horses. W. Kitchener was given command of three columns brought in from the Eastern Transvaal, amounting to 3000 horses. Rochfort, with seven columns on the Vaal in the Bloemhof district, brought in 2500 horses. In this way 16,000 horses were concentrated and made up into four divisions, each 4000 strong. The sudden increase in the number of mounted troops in the Western Transvaal must be carefully noted. This area of the war had never been remarkable for either the number or size of its columns, and the veterinary requirements were met by outlying hospitals at Klerksdorp and Krugersdorp, which emptied their contents into the hospitals at Potchefstroom and Johannesburg. Suddenly Klerksdorp, with its small hospital, had become in a night the most important centre in the campaign, and would evidently be severely tried with so large a force based on that place.

The position of the enemy was unknown with exactitude, though large numbers were believed to be west of Klerksdorp. De la Rey had met De Wet about 25 miles west of Klerksdorp, and though the latter had returned after the interview to the Free State, Steyn remained behind, and was still with De la Rey in the position indicated. Kemp was 12 miles to De la Rey's west, and Liebenberg was once more back in the vicinity of Wolmaranstad, which had now been evacuated. A movement to the west was hopeful, and Lord Kitchener, who was personally present at Klerksdorp on 19th, gave orders for it to occur on the evening of 23rd March. The operations were remarkable for their simplicity, audacity, and severity on animals. Some 11,000 mounted men were to ride out for 40 miles west on a narrow front in three columns, and so get between the various Commandos. To enable this to be carried out, it had to take place in the dark, and to be done quickly. No less than 40 miles had to be covered in one night. The columns were then to open out, form one long line and drive back to the Schoon Spruit blockhouse line, which ran north from Klerksdorp. All these columns did not start from Klerksdorp. Kekewich moved off from Vaal Bank on the blockhouse line running from Lichtenburg to Schoon Spruit; Kitchener and Rawlinson from Klerksdorp, Rochfort from Commando Drift on the Vaal south of Wolmaranstad.

On the night of the 23rd, without guns or transport, the Columns passed out silently to the west, Rochfort to the north. The distance within the given time could only be accomplished by trotting. At dawn they turned about and opened out, forming a line 90 miles in length, or the distance between Birmingham and Cambridge. But there were gaps in this line; two Columns failed to get into touch, and Steyn, De la Rey and Kemp availed themselves of the opportunity and passed through. Liebenberg had more difficulty; in consequence he had to abandon the captured guns and waggons, but by going south escaped. Rain came down in torrents; the Columns, worn out by fatigue, reached their base 40 miles east by the evening of 24th March. The results were small, 1671 head of stock and 173 prisoners, and in consequence of the severity of the work the veterinary hospital was filled to overflowing.

Action at Boschbult.

The next movement decided upon by Lord Kitchener from Klerksdorp was to take place on 26th March. It was to differ in character from the last. Kekewich was to establish a fortified base at Middelbult, 23 miles south of Lichtenburg. W. Kitchener was to move to Driekuil south of Middelbult, and form an entrenched camp. Rawlinson was to march to Rhenoster Spruit, 16 miles west of Klerksdorp, while Rochfort remained on the Vaal. The troops were to operate from the position assigned to them, so transport and guns were taken. Kekewich was in position on 29th, and Kitchener on 30th March. At 2 a.m. on 31st Kitchener sent a Column of 1800 mounted men and guns under Cookson on a reconnaissance to the west of his position along the Brak Spruit. The horses carried two days supplies for man and horse, and mule transport carried a third day's supply. The force moved rapidly, and, without knowing it, in the exact direction of De la Rey's camp. At 10 a.m. a body of the enemy was sighted, and chased by nearly all the troops Cookson had, excepting those with the transport. At a hand gallop the enemy was followed for some miles, when suddenly a check occurred; they had been joined by re-inforcements, and now faced round on their pursuers. It was evident to Cookson that he must fight where he was; he had marched 35 miles since early morning, and any attempt at retirement would have meant annihilation. An eight-mile gallop brought him up some more men from the rear, and later on his transport arrived. Meanwhile he kept the enemy off while he entrenched himself. Generals like De la Rey do not usually give time for an enemy to improvise defences, but the fact was he had to call up Commandos, and it was not until 1.30 that he was in a position to make any serious attack. Meanwhile the laager, not yet completed for defence, had been formed in a farm on the edge of the Spruit, and the mules placed in the dry bed under cover. The attack at *Boschbult* was opened by Artillery fire, the explosion of the shells in the laager stampeded some of the still inspanned mules, which broke away and created confusion in a Company of Mounted Infantry. Advantage was taken of this by the enemy to charge the laager, a line four miles long advancing for this purpose, but they were received by so severe a fire that they moved away. By the early afternoon the defences of the laager were sufficiently advanced to allow of a screen hitherto in the open to return to cover. Its retirement was the signal for a fresh attack.

Fighting continued until the evening when the enemy retired. It was De la Rey's last fight. All night long Cookson was strengthening his defences, for which purpose the bodies of his slain animals were largely used. The casualties were heavy, 364 horses and mules had been killed in the laager, and 100 men killed and wounded. Next day Cookson could not have moved had he so desired owing to the destruction of his transport animals; by mid-day W. Kitchener arrived, and both Columns returned to Driekuil on 2nd April.

The remaining operations in the Western Transvaal were conducted by General Sir Ian Hamilton, who arrived at Middelbult on 8th April.

Ian Hamilton's Operations.

April and May, 1902.

Rooiwal.

Hamilton feeling certain his enemy was to the south in the vicinity of the Brak Spruit moved in three columns on 10th April. Kekewich being on the right, Rawlinson in the centre, and W. Kitchener on the left. By night the right was at *Rooiwal*, almost on the ground where Cookson met De la Rey at Boschbult, and not far from the scene of Methuen's disaster. On the morning of the 11th a strong force was seen bearing down on Kekewich, which, from its regularity, was believed to be one of the other columns, nor was it until the enemy was quite close and already among the advance screen that all doubts were at rest. Von Donop and Grenfell, the two lieutenants of Kekewich, rapidly formed an irregular line; they had but a few seconds in which to do it. The enemy was advancing towards them at a slow canter in line two and three deep, firing from the saddle and shouting. They were met by a rattle of musketry and case from the guns, but it had no effect. Riding at their head was Commandant Potgieter; nearer and nearer approached the intrepid horsemen, facing a stream of fire which, though it thinned their ranks, did not diminish the astounding courage which animated the best soldiers of the Federal armies. These men had been trained under a master in the art of war; he, De la Rey, was absent discussing terms of peace, and Kemp was in command. Without increasing or diminishing the pace, the enemy advanced nearer and nearer, until but 100 yards separated them from the line of magazine fire; then they turned, though not their leader; Potgieter was killed 70 yards from the line. The mass retired

at a faster pace than it advanced, and one of the most wonderful sights witnessed in the war was over in a few minutes.

In describing it, the "Official History" * says:—

"The howling rush of the Dervish or Ghazi, the sonorous charge of European Cavalry, the chanting onset of the Zulu impi, were less impressive than the slow oncoming of this brigade of mounted riflemen." *

There was no Cavalry on the field to pursue: Grenfell had 150 horses killed, exclusive of those in the advance screen, and many had stampeded. It was an hour before any steps could be taken to follow up the demoralized enemy, and by that time Hamilton had arrived. Pushing on with 2000 mounted men in a southerly direction he soon came in contact with Kemp, who had not expected pursuit, and for three hours this was kept up until 18 miles had been covered, and the horses could go no further. The force then returned to Rooiwal after being in action 14 hours. The losses among the horses during the attack amounted to 300 killed; these casualties occurred wholly in the columns of Kekewich.

There is a lesson in this which applies to all hastily constructed machines in war. According to the recognised rules of war, the enemy under the effect of magazine fire should have been swept away. As a matter of fact their losses were relatively small. Our men could not shoot straight. The "Times History," vol. v., p. 529, in speaking of the composition of Hamilton's force, says:—"There were hundreds of townsmen among the Yeomanry who had barely been able to sit a horse or sight a rifle when they first came to South Africa. No Mounted Corps on the field had had a separate existence before the war broke out, and only one, the Imperial Light Horse, was as old even as the outbreak of war."

The principle which applies to this fine body of imperfectly trained men, equally applies to all branches, be they combatant or non-combatant, when the country has to depend upon the willing but untrained services of the general public. So far as the veterinary service is concerned, we have in these pages made this abundantly clear, but it is well to see its effects in the combatant ranks, in order to relieve our criticism of the risk of being considered ungracious.

The final operation in the Western Transvaal remains to be told. The "drive" was still the only military weapon of any value, and we have watched its effects upon the horses during the process of its evolution. The two latest applications of this measure were represented by a long line advancing many miles daily and closing up gaps at night, or by columns shooting out rapidly for 40 miles into the veldt on a narrow front, turning about, deploying into one long continuous line and driving home for 40 miles at their best pace. There is, of course, no question which of these is the most costly in horses; experience showed that there was practically no difference in the tactical results obtained.

Hamilton adopted a sound measure from a horse point of view in the last drive of the war. He had been strengthened by the addition of two divisions, that of Thorneycroft with his two columns of Australians and New Zealanders, and Rochfort's column which had been operating on the Vaal. His force was now brought up to 17,000 horses, the largest mounted body ever placed in the hands of a British General. He was in the middle of the southern half of the Western Transvaal, and from this point he intended to drive towards the west on to the blockhoused Vryburg-Mafeking line. His troops were arranged in one long line extending for 30 miles, in a position which may be roughly indicated by saying that it occupied the whole middle third of the space between Lichtenburg and Wolmaranstad. This bush-whacking of a continent required a great deal of thinking out, as both ends of the line were in the air and therefore vulnerable. This was guarded against on the south by Rochfort coming up from the Vaal and joining the advancing line the day before the blow was to fall. When he came into position the line was 50 miles in length, equivalent to a line of horsemen extending from London to Basingstoke. The driving distance from where Hamilton started to the Vryburg railway was 80 miles. Five days were to be occupied, so that the average day's march was 16 miles, which left the animals fit at the end of it, in spite of the inhospitable nature of the country generally, and its waterless character.

The account of these operations given by the "Times History," vol. v., cannot be omitted. In referring to the net now approaching the Vryburg blockhouse line it says:—

"Behind the 300 in the cordon were 17,000 troops entrenched. Thorneycroft dug redoubts at every 100 yards for six miles, and filled in the interval with waggons and barbed wire. Kitchener's redoubts were 50 yards apart. In front of the 300 were six armoured trains and 45 miles of blockhouses manned by 4000 rifles. It was the night of the 10th May, the day before the armistice."

The drive concluded on 11th May, and resulted in the capture of 367 prisoners. On 17th, the columns returned to their several bases and awaited the result of the peace negotiations.

The war was over.

In the 29 columns existing at this time in the Western Transvaal there were 20,700 horses; the work done by 17,000 of these we have just related. We must now look at the question of the veterinary arrangements made at Klerksdorp for the care of not less than 3000 sick, resulting from the last month's operations.

* Vol. iv., p. 501.

VETERINARY HOSPITALS DURING 1902.

The pressure exercised on the veterinary hospitals during 1902 was greater than ever, owing to the existence of specific lymphangitis in addition to the other epizootics. The general sick rate had been reduced in consequence of a change in the character of the work, and the greater care and attention paid to animals resulting from Colonel Long's inspection of columns. For example, just prior to his appointment there were 27,900 sick for the week ending 24th October. Four months later the total sick amounted to 17,700. It is true it again rose on the 14th May, and stood at 24,700 sick, but there had been a great increase in the number of horses employed.

The work of the hospitals generally had improved, the great difficulty was to obtain sufficient native labour, and this became so acute in connection with the Klerksdorp Hospital during the period of the Western Transvaal Campaign that men had to be sent from other hospitals in order to try to cope with the pressure, and finally white refugees had to be employed.* Most of the hospitals were working smoothly. The exception was in the Eastern and Western Transvaal where the congestion was intense. Nevertheless, the general efficiency was satisfactory, as an example of which the returns for the week ending the 14th May may be quoted. During that week 6000 horses were discharged from hospital to duty, an average of 120 weekly from each of the fifty hospitals. The discharge of this large number afforded no relief to the work, for 7000 others were admitted to treatment.

The chief interest in hospital work during the last month of the war centres around the small branch hospital at Klerksdorp, which had suddenly to expand to meet military requirements. It could not expand fast enough owing to the deficiency of labour and the poverty of the water supply. No water was laid on, and the shelters for the sick were few. The hospital also worked under other difficulties; from one cause or another those in charge of it were frequently changed. There was a change on 27th November, 1901, another on 24th January, 1902, 8th February, and again on 18th March. It must be remembered in this connection that at this time two officers were controlling the energies of the Veterinary Department, Colonels Matthews and Long. The former was endeavouring to meet the urgent demands made on him by Column Commanders for veterinary aid, the latter was opposed to the supply, and wished the veterinary staff to be withdrawn from columns and placed on the line. Extra Field Hospitals had been ordered by the Authorities which had to be staffed and to which Colonel Long objected, not knowing at the time that it was the Commander-in-Chief's order; equally, and for the same reason, he took exception to veterinary officers being sent to columns. A dual control necessarily always creates an impossible position; nevetheless, the frequent changes in connection with the Klerksdorp Hospital ought, in principle, to have been avoided, for such changes are fatal to effective working. The P.V.O. was anxious to have a senior officer of the A.V.D. in charge, and this he was unable to effect until 18th March.

The officer selected had only been a few days in Africa, knew nothing of local conditions and difficulties, and had barely taken over when his assistant officer was found unfit for service and sent on sick leave. The sick in hospital on 18th March amounted to 550, and was daily rising. Stabling, water supply and labour had been promised, but were not forthcoming sufficiently fast to meet the urgency of the situation. The P.V.O. had personally been present at Klerksdorp to push matters along, and he was followed a little later by Colonel Long. But even the latter—who, of course, owing to his official position was responsible—could make no headway; buildings, water, and mangers take time to construct; nose-bags and line gear could not be obtained in sufficient quantities to meet the daily increase in the numbers, and to obtain labour locally was impossible. On 25th March there were 1000 sick with personnel for half the number. Already a hospital for 1700 sick had been projected, but until it could take shape* it was evident that the sick must be sent away from the place, a scheme which the Authorities objected to owing to the congestion of all the other hospitals in the district. Potchefstroom, for instance, already had 1400 sick of its own, Johannesburg 2300 sick, Krugersdorp was full to overflowing, and to further increase the personnel difficulties a fifth hospital was ordered to be formed at Springs, near Johannesburg, for 500 animals. In the first days of April the P.V.O. was again at Klerksdorp. An Australian and New Zealand contingent had arrived, 2500 strong, and 90% of their horses had been affected with influenza, and 25% were still suffering. It was impossible to find accommodation for these, as the number in hospital at Klerksdorp on 9th April stood at 1200, so they had to form a depot for their sick in which 300 animals were placed.

We have seen from the dates of operations the number of times columns returned to Klerksdorp for re-fitting, and always adding to the sick. On one day in March, 360 horses out of a total of 700 with Kekewich had to be sent to hospital as being unfit for work, and such examples were numerous.† The pressure of work on the black labour employed in the Hospital rose to breaking point, it was impossible to get the horses properly watered or

* The experiment of employing 150 convalescent soldiers at Pretoria for hospital duties, in order to liberate natives for the Klerksdorp Hospital, was a hopeless failure. Not only were the men unfit for hard work for reasons of health, but they could not handle mobs of horses.

* Stabling for 500 sick was not approved until 20th April.

† In his evidence before the Royal Commission, Major-General Kekewich stated, *Q.* 22,024, that during the last month of the war he used up 1500 horses. His strength at the time was 4000, so that his loss was 37·5% a month, or 450% a year.

fed, and the extra labour sent from time to time never met the urgency, as the sick list rose by leaps and bounds. On 20th April it stood at 2200, and a day or two later approval was given to reduce the strain by sending 500 of the sick to other hospitals. It was not, indeed, until the urgency had passed away that proper accommodation for the sick, water supply, and labour were obtainable at Klerksdorp. In the meantime another hospital break-down had been placed to the credit of the Veterinary Service.

It was not as if the grinding machinery had stopped working elsewhere, which would have enabled further aid being sent to Klerksdorp. The account given of the operations will show how far that was from being the case. In fact, the congestion of the hospitals on the line from Johannesburg to Natal in the Eastern Transvaal, was as bad as it was in the Western Transvaal. The hospital at Standerton had been receiving the sick from Bruce Hamilton's operations, and on 29th April there were 2300 cases in hospital, more coming in, and labour urgently required. One hospital further down the line had to be closed owing to the failure of water supply, and its sick distributed to places already congested.

Returning to Klerksdorp, from the 24th April the work had to be carried on single handed owing to the sickness of the second officer, and we may briefly look at the duties which had to be performed by the one who was left. In hospital he had over 2000 sick. Every column based on Klerksdorp had a debility depot of its own, of cases requiring rest. These depots had to be visited daily, and the cases of glanders and mange they contained weeded out. There was a large transport depot with sick animals, a depot for captured stock, the cattle in which were suffering from pleuro-pneumonia, "red water" and rinderpest. Both of these had to be visited and assisted. Finally the hospital had to take on the duties of the supply of veterinary stores to units in the Field, a laborious and time-consuming service. Under the above circumstances there appears to us to be good excuse for the failure of Klerksdorp as constituted to meet the requirements of sudden and intense military activity. Yet we shall ever deplore the dual control in administration, and regret that the undivided attention of a senior administrative officer with long experience of the war was not devoted to this one centre of extraordinary activity, with three or four officers placed in the hospital for executive duties. These steps could not have affected the water supply, nor the shortage of nose-bags, the absence of mangers and stabling, and the poverty of black labour; they would not have prevented the hospital being crushed under the pressure exercised upon it, but they would have prevented any reproach on departmental arrangements.

On the day peace was proclaimed there were 28,700 sick horses and mules in South Africa, of these 19,500 were in the fifty existing hospitals, the balance being on debility farms under Remount management.

On the same day the Veterinary Service with Units, Remounts and Hospitals consisted of :—

Veterinary Officers	63
Civil Veterinary Surgeons	113
European Dressers	79
Indian „	528
Civil Farriers, Conductors and Clerks	217
South African Natives	3547

We are fortunate in having recently had placed before us the cost of the upkeep of a hospital in South Africa.* One for 1500 animals at Middelburg cost £245 a day, of which £187 was for rations for the horses. As the animals would have to be fed, whether in or out of hospital, it is thought the charge for rations should not be placed against the cost of maintaining a hospital, in which case the expenditure would be reduced to £58 a day for 1500 sick. The astonishing fact comes out in Major Cochrane's paper that the cost of drugs and dressings only amounts to one-fifth of a penny per day per horse, or 4s. 2d. daily for 1500 animals. These figures are the outcome of direct observation and painstaking inquiry; it will be impossible in future to argue that it is cheaper in war to allow horses to die than to institute a place for their medical and surgical treatment; even if the other condition (acclimatisation) urged at pp. 134-135 was not permitted to carry weight.

The declaration of peace brought no reduction in the numbers in hospital, on the other hand they increased, for animals which could not previously be laid up for treatment had now to be admitted. The number of hospitals were now gradually reduced, for a large hospital run on good lines gives far better results than several smaller hospitals of unequal value. Nevertheless it was ten months after the war before the hospitals fell to nine, the number then fixed as the future establishment for the country.

THE REMOUNT DEPARTMENT IN 1902.

By 1902 a system had been in operation which could not now be changed, we allude to that of placing animals in the ranks as soon as they were landed. It is true an effort was made to avoid this, but under military pressure all regulations in this respect had to be swept aside for the time being. It was these spasmodic outbursts of activity which proved so wasteful of horses.

An Inspector-General of Remounts for South Africa, whose appointment was notified in Cable No. 101, see p, 189, arrived in South Africa on 31st Dec., 1901, and took over the duties by inspecting

* "Veterinary Hospitals during War," Major R. C. Cochrane, A.V.C.—*United Service Magazine*, Nov., 1913. This paper ought to be read by all interested in the question of hospitals, including economists.

the various Remount Depots in the Command. At this time, therefore, there existed an Inspector-General of Remounts with a Staff Officer, together with a Veterinary officer, Captain Carr, A.V.D., who acted as ungazetted A.D.C. to the General. In addition, there was an Inspector of Remounts and Hospitals, and an Assistant-Inspector of Remounts. The result of the inspection by the Inspector-General of Remounts of the various Remount Depots in the Cape was, on the whole, satisfactory.* The depot at Durban he condemned, as in wet weather the horses stood up to their hocks in mud. The climate also was bad for horses, and the animals lost condition. A rest camp had accordingly been formed six miles from Durban, and from here the horses were forwarded to a large farm twelve miles north, where accommodation for 2000 was in course of time erected. The Inspector-General considered the Natal Remount work was "much worse organised than the others," but, with a change in administration, improvement was hoped for. He observed that mangers did not exist in all the depots, but had been ordered, and that water was not always laid on.

The remount depots were divided by him into three groups: landing depots at Cape Town (Stellenbosch), Port Elizabeth, East London, and Durban; issuing depots at De Aar, Bowker's Park (Queenstown), Bloemfontein, Johannesburg, Standerton and Newcastle. Resuscitating depots (debility farms), at Worcester, Naauwpoort, Craddock, Stormberg, Aliwal North, Burghersdorp, and Dordrecht in Cape Colony, Lynch's Farm at Bloemfontein, Heilbron, Winburg, and Springfontein in the Free State. In this report the condition of the defective depot at Mooi River is not specifically referred to.

The Inspector-General drew attention to the fact that the Remount Officers employed in the various depots all over South Africa had no previous experience of remount work, but were doing their best.

Regarding the length of time given to horses after landing in order to fit them for work, a point into which he was specially charged by the War Office to enquire, he says: "Lord Kitchener told me he had given orders that no horse was to be issued for use with columns on service until it had been a month in South Africa. Very few of the officers I found knew of this order, and horses were continually sent to depots up country with no description of them or date of their arrival in the country. I gave stringent orders to remedy this, and called in all horses I found already issued that had been too short a time in South Africa."

The Inspector-General of Remounts did not remain long in South Africa; by the end of March, 1902, he was in Australia, and the only matter of professional interest connected with his report from that country, is a note on the needlessly large veterinary staff maintained there. His remarks on this matter must be reproduced, as they have a bearing on a very important question. "Civil Veterinary Surgeon Conacher was sent from Pretoria to see whether blue (*sic*) glanders existed in Australia. Now, as there were in the country two very competent men, Veterinary-Captain Nuthall, A.V.D., and C.V.S. Taylor, the sending of Mr. Conacher appears to have been but a useless expense, especially as I know that competent veterinary surgeons were terribly wanted at the time in South Africa."

As to the nature of "blue" glanders we know nothing, and never heard of it until it appeared in this report. It is most unlikely that Colonel Matthews would send anyone to Australia to look for a disease which did not exist, and the question arises as to who sent this gentleman looking for glanders in a country where it has never been seen? Mr. Conacher was attached to the Remount Department, and his visit to Australia, so rightly condemned by the Inspector-General of Remounts, may have been connected with the evidence given by Col. Darby before the C. of E. Remounts dealt with at p. 203.

Returning to a general account of the remount operations during 1902, there was probably no period in the war, since Bloemfontein in 1900, when the pressure had been so great as from March to May, 1902. An increase in the number of horses sent to the country was met by an increase in the size of the depots. We have already seen that this occurred in Natal, but, in addition, the Port Elizabeth depot in January was nearly doubled in size.

One of the very busy remount centres during 1902 was the improvised depot located at Klerksdorp. Prior to the Western Transvaal Campaign it was merely a place where columns threw in their sick and worn, and received fresh animals in their place; but the operations undertaken in March, April and May necessitated a rapid and considerable expansion, such as had never been anticipated. The depot, in fact, suffered from acute congestion, for the same reason as we have seen the hospital did. Standerton was another extremely busy centre, the Natal Railway being actively occupied during 1902 in pouring up remounts to Johannesburg. With a change in the local administration at Mooi River, a marked improvement occurred in a large and important depot which had become a reproach, see p. 201.

The inspection of Remount Depots by Colonel Long and the Inspector-General of Remounts had led to considerable structural improvements, while their veterinary supervision throughout South Africa having been in the hands of Major Blenkinsop, D.S.O., for several months, insured an organisation and thoroughness of veterinary work which had previously been absent.

The debility farms and remount depots had been largely freed from the diseases which had previously

* Reports by Officers appointed by the Commander-in-Chief to inquire into the working of the Remount Department Abroad. "Parliamentary Paper," Cd. 995, 1902.

carried off thousands. * The balance of the "protection stock" had received veterinary supervision, and matters as a whole during 1902 were better than they had ever previously been.

Nevertheless, unfit horses were still employed in making war, and if any failure of the Remount Service can be urged at this late period of the campaign, it is that of not grappling closely with the question of conditioning horses even during the short time the animals remained in the depots. It is true that practically every depot possessed an Eassie exercising track (see p. 129), but more than this is required for riding horses; these, in order to be conditioned, must carry a saddle and man, see p. 189.

The remount view appears to have been that it was not part of their duty to ride and train the horses, but it seems to us that it was much more their duty than that of looking after thousands of sick animals on debility farms. We fully recognise the extraordinary difficulty and expense attached to conditioning 10,000 horses a month, but the heavy financial burden thus incurred would have been cheaper than horses, and no one can doubt the saving and efficiency which would have resulted. Before the war, the question of conditioning remounts for the Field had never been thought of, possibly for the reason that the handful of horses which the War office laid down in War Establishments, as meeting the requirements of a Force, did not appear to suggest any difficulties in the way of exercise.

The conditioning of remounts in the Field for both saddle and draught work is a matter which requires the closest attention, if we are to avoid in the future the errors of the past. We do not believe that it can be satisfactorily arranged for excepting by charging the remount branch with this duty, for it is impossible to conceive two distinct departments connected with the receipt and issue of horses in war, and another charged with getting them into condition before they are given to the troops to use. The work must be centralized, and proper training establishments provided.

There are no returns after January, 1902, to show exactly the number of horses which came into the country month by month up to the proclamation of peace. In a Cable from the War Office of 26th November, 1901 (see p. 189), the numbers then being sent, in response to an increase asked for on the previous day, are put down at 10,000 to 12,000 remounts a month, and on the 24th December a Cable was received to the effect that 40,000 horses would be landed in December, January and February. The total supplied from January to June, 1902, was probably as follows:—

	Horses	Mules
Oversea remounts, *less* loss at sea	84,688	10,447
At sea in Dec., 1901, *less* loss	9367	985
Remounts obtained in S. Africa	11,898	10,520
	106,223	21,952

The loss of horses and mules during the period January to May, 1902, is estimated by us, on the basis explained at p. 141, as being in round numbers as follows:—

Horses . 73,400
Mules . 7800

It is again necessary to note that these losses only refer to the animals paid for, and do not include the thousands picked up * and utilised, which were obviously fewer in 1902 than during the preceding years.

TOTAL LOSSES FOR THE WAR.

We may now present the total losses during the entire period of the war, and the loss we refer to is the dead loss, *i.e.*, the total number of animals which actually disappeared out of the total paid for, and exclusive of those "picked up" in South Africa.

Dead loss	Horses	Mules
1899-1900	**110,028**	**29,113**
1901	**142,603**	**14,433**
1902	**73,442**	**7853**
Totals	**326,073**	**51,399**

These losses are 66·8872% for horses, and 35·3751% for mules year by year throughout the war; the numbers for each period must not be regarded as anything but approximate, for we have previously explained how they have been arrived at, but the accuracy of the totals may be accepted as they are official. See Appendix 38, p. 258, "Appendices to the Minutes of Evidence" R.C.

The circumstances attending this holocaust have formed the bulk of this history.

A great deal of scattered information regarding the loss of animals in the Field has already been recorded in these pages. A knowledge of such loss is of the utmost moment. It indicates the provision to be made for the future, and it enables a Commander to calculate beforehand what his requirements in re-inforcements are likely to be. We can only regret that the information respecting losses has not been complete or continuous, so that the cost in animals of every operation, large and small, might have been known. Even under pressure of active service brief note-making is

* See p. 204 for the destructions in Cape Colony between September and December, 1901, inclusive. From January to May, 1902, the numbers were as follows:—

Glanders	1380
Mange	120
Debility, injuries, etc.	390

During this period 1870 died in addition to the above.

* One small M.I. Column, 500 strong, alone collected 13,500 animals off the veldt in the Free State in fourteen months, and handed in 10,000 to remounts. These figures were kept by C.V.S. R. MacDonald. (See also footnote, p. 185).

In the House of Commons, 8th Feb., 1902, it was stated that 89,705 horses had been captured. The war had yet another four months to run, and it is certain the total captures amounted to over 125,000 animals.

possible, but few people appear to realise the value of such observations, and still fewer know what to record and what to reject. Regimental losses during the war are most difficult to obtain, and in many cases owing to the numerous refits of horses, no record appears to have been kept. There is one remarkable exception: Captain A. S. Head, A.V.C. (R), who served with the Inniskilling Dragoons throughout the war, kept the most careful notes of losses from all causes in this Regiment.* His tables are unique, and as a record of untiring zeal and industry, under most disadvantageous conditions, they are never likely in the future to be approached, let alone equalled.

He tells us that from November, 1899—June, 1902, the Inniskilling Dragoons used up 3750 horses.

The distance they covered in this time measured in a straight line and on a flat surface was 6116 miles. This must at least be doubled if we are to form any notion of the amount of ground covered.

On this basis one horse was used up for every 3½ miles covered during the war.

The following table shows the strength of the Inniskilling Dragoons on landing in Africa, the number of horses that joined the regiment through the war, and the number expended during the same period.

Income, Nov., 1899 to June, 1902.

Strength on landing	406
Remounts	3061
"Picked up" on the Veldt	222
Transfers from other Regiments	601
Number of horses joined	4290

Expenditure. Nov., 1899 to June, 1902.

Sent to Veterinary Hospitals	1600
Missing	201
Returned to Remount Depot	202
Abandoned	201
Destroyed	595
Died	482
Transferred to other Regiments	469
Number of horses expended	3750
Strength on 31st May, 1902	540
	4290

The expenditure for two and a half years of active service was equivalent to the whole regiment being re-horsed ten and a half times.

As evidence of the amount of sickness and accident occurring among horses on service, it is interesting to observe that the 4290 horses furnished 4170 admissions, so that practically every horse was sick at some time or other during the campaign. In this connection it is important to note that not a single case is recorded as sick that could perform duty of any kind. For example, there were hundreds of cases of mange in the regiment at one time or other, yet only 23 figure on the returns during two and a half years.

It is well to bear in mind the amount of regimental sickness and inefficiency, as there are people who have suggested the withdrawal of veterinary officers from regiments on service in order to place them on the line. The figures above quoted show that there is an abundance of work to be attended to, not only in treatment but in prevention. Nearly a quarter of the above cases of sickness were treated regimentally and returned to duty without burdening the hospitals. It is not bullets which kill horses on service; we have seen this over and over again in these pages. Capt. Head's figures provide us with an exact expression. Out of 4170 cases of sickness occurring in two and a half years, only 163 were due to bullet wounds, and three to shell fire! Nevertheless, the Inniskilling Dragoons saw a good deal of fighting.

The next instructive table supplied by Captain Head shows the casualties for each march or engagement throughout the war, and the distance travelled; the table only shows the actual casualties during the march, and does not include those in the intervals between the marches. It is important to observe that the mileage is the distance covered between the point of departure and the conclusion of the operations. For example, in the thirteenth entry it reads as if the distance from Krugersdorp to Johannesburg were 297 miles. The two places are close together, but twenty-eight days circuitous marching occurred before the column came to temporary rest at Johannesburg. (*See Table, p.* 228).

One more regimental record has been furnished through the painstaking observation of a Civil Veterinary Surgeon, Mr. Roderick MacDonald (Canadian Graduate), served for fourteen months with the 1st Mounted Infantry. The following table shows the number of horses expended during that time:—

Income, March, 1901, to 31st May, 1902.

Strength on 22nd March, 1901	480
Remounts	775
"Picked up" on the Veldt	360
	1615

Expenditure, March 1901, to 31st May, 1902.

Died, Destroyed, Killed in Action *	513
Sent to Vety. Hospitals and Depots	518
Number of Horses expended	1031
Strength on 31st May, 1902	584
	1615

The regiment in fourteen months was completely re-horsed over three and a quarter times.

Of the cases treated in the Field 36% were surgical, 17% were due to lameness, 12% to skin disease, 6% to disorders of the digestive apparatus, and 29% various.

* "The Wear and Tear of Horses during the South African War," Lieut. A. S. Head, A.V.D.—*Journal of Comparative Pathology and Therapeutics, 1903.*

* There were 50 killed in action and 10 lost by lightning.

6TH INNISKILLING DRAGOONS.

*Table showing Casualties for each March, and Distance Travelled during the War.**

Time Occupied.		March		Strength at Date of Marching.	Died or Destroyed on March.	Abandoned on March.	Missing.	Sick at End of March.	Fit at End of March.	Distance Travelled in Miles.	Remarks showing Principal Causes of Casualties.
Date From	Date To	From.	To.								
1899	1900										
10/12	6/3	Arundel	Colesburg	490	60	Nil.	13	41	376	30	31 killed in action ; 20 destroyed, bullet wounds, ; 15 sore backs.
1900											
6/3	17/4	Colesburg	Bloemfontein	298	4	Nil.	Nil.	22	272	200	3 destroyed from exhaustion ; 1 died ; 10 sore backs remaining.
11/2	14/2	Modder	Kimberley	94	5	Nil.	Nil.	10	79	80	5 destroyed, bullet wounds ; 6 sore backs remaining.
15/2	13/3	Kimberley	Bloemfontein	79	4	9	Nil.	20	46	100	Exhaustion cause of casualties ; 12 sore backs remaining.
6/5	12/5	Bloemfontein	Kroonstad	447	48	2	Nil.	63	323	120	31 killed in action ; 14 died of wounds and exhaustion ; 11 sent to veterinary hospital ; 28 sore backs remaining.
20/5	6/6	Kroonstad	Pretoria	372	30	70	1	72	196	175	10 died ; 20 destroyed from exhaustion ; 70 abandoned ; 30 sore backs remaining.
9/7	3/8	Pretoria	Middelburg	556	41	23	37	24	323	120	108 sent to veterinary hospital on march, mostly sore backs and exhaustion ; 18 died and 23 destroyed, exhaustion.
18/8	6/9	Middelburg	Carolina	321	10	9	5	28	306	165	59 remounts joined ; 22 horses sent to veterinary hospital, of these 11 were sore backs, 5 exhaustion ; 19 died and destroyed, exhaustion ; 11 sore baeks remaining.
10/9	14/9	Carolina	Barberton	330	6	8	6	24	286	70	2 tulip poisoning ; 1 bullet wound ; 3 destroyed, exhaustion ; 11 sore backs remaining ; 8 exhaustion.
3/10	3/11	Barberton	Pretoria	271	44	49	24	48	224	310	216 remounts joined ; 97 horses sent veterinary hospital on march, of which 39 were sore backs and 48 exhaustion ; 92 died or abandoned, exhaustion ; 24 sore backs remaining.
11/11	21/11	Pretoria	Meyerton	416	6	Nil.	9	10	391	55	3 sore backs.
14/12	16/12	Meyerton	Krugersdorp	377	3	Nil.	Nil.	1	373	40	1 died, exhaustion ; 2 destroyed, fracture.
	1901										
19/12	16/1	Krugersdorp	Johannesburg	406	27	Nil.	5	48	343	297	29 remounts joined ; 46 horses sent to veterinary hospital on march, of which 28 were sore backs and 14 exhaustion ; 13 cases of horse sickness ; 18 sore backs ; 16 exhaustion cases remaining end of march.
1901											
27/1	6/5	Johannesburg	Middelburg	404	112	Nil.	25	20	405	350	156 sent to veterinary hospital, consisting of 14 sore backs, the remainder exhaustion and debility ; of these, 25 died horse-sickness, 6 destroyed ; the remainder died and destroyed, exhaustion.
12/5	30/5	Middelburg	Steynsdorp	420	21	Nil.	10	20	454	160	71 remounts joined, and 13 Boer ponies picked up on march ; 20 horses sent to sick depot.
1/6	3/7	Steynsdorp	Middelburg	454	46	Nil.	Nil.	22	394	175	8 Boer ponies taken on strength ; 22 sent to sick depct.
8/7	14/7	Middelburg	Pretoria	395	2	Nil.	Nil.	8	385	85	
22/7	31/12	Orange River Colony.		385	313	Nil.	38	314	519	1814	767 remounts joined ; 91 ponies taken on strength ; 40 received from A.P.M. column ; 314 sent to sick depot and 99 to remount depot.
1902	1902										
1/1	18/5	Orange River Colony.		519	164	Nil.	9	208	496	1610	358 remounts joined ; 208 horses sent to veterinary hospital ; of those died and destroyed, majority were exhaustion.
21/6	29/6	Heilbron	Bloemfontein	540	Nil.	Nil.	Nil.	Nil.	540	160	

* This table only shows the actual casualties during the marches, and does not include those occurring in the intervals between the marches.

The 1st of June, 1902, saw South Africa officially at peace, with thousands of horses, mules and oxen to dispose of. The total number of animals in the country on that date which had been paid for was 161,400 horses, and 93,900 mules.* After deducting those required for the Army of occupation, 140,000 horses and some 74,000 mules were in excess of requirements, and the problem was how to get rid of these as speedily as possible in view of the cost of keeping idle mouths.†

The country was devastated, and a department was formed known as the Repatriation, the function of which was to restore matters to a condition which would enable a fresh start to be made by the community. This department relieved the army of some thousands of horses and mules, but there was still a large balance available for sale which was gradually disposed of within the next few months. Prior to this, however, all horses serving with units were inspected with the object of retaining in the service only the best out of the large stock available.

The army was full of glanders and mange, the latter was obvious, the former was not. The Repatriation Department naturally insisted on the mallein test being employed for all animals purchased by them, and many thousands of inoculations were made, but in spite of this the numbers were so vast, and the urgency of regenerating the country so great, that many could not be tested for want of time and available material, and no doubt a considerable number of cases of glanders found their way into various quarters of the country. This was the more marked with those animals sold in the public market, for which no guarantee could be given, and only a limited number of which had been tested. The Civil Veterinary Departments of all the Colonies regarded this dispersal of innumerable foci of both glanders and lymphangitis with natural apprehension, but the disposal of the horses was a very necessary measure, and every reasonable effort was made to reduce the penalty of purchasing from an infected mass of material. Nevertheless, the civil departments were kept very busy for the next few years in their endeavour to stamp out both of these diseases. By about September, 1902, the Army had reduced its proportion of animals to a peace establishment.

* The Tables published by the Royal Commission show 151,100 horses and 94,600 mules. The difference in horses is due to the reinforcements from home and oversea contingents not having been included in the War Office returns.

† There is a great discrepancy in the various Tables of the numbers of animals existing on 1st June, 1902. The figures quoted are from the Tables in the Royal Commission on the War. There are others, which show the totals as follows :—

Horses	Mules	Oxen	Donkeys
142,159	76,640	74,300	12,800

THE BREEDS OF HORSES.

Some reference must be made to a debate on the war in the House of Commons, reported in the *Times* of 1st February, 1902. It centred around the Remount question, and frequent reference was made to horses being "bad." During the war an attempt was made to ascertain the wearing qualities and staying powers of the various breeds of oversea animals. The only oversea remount with which no fault could be found was the English "bus" horse. There were many then, and probably many to this day, who believed that the special qualities of this animal were primarily due to his being English. In the above discussion Lord Stanley destroyed this myth, by pointing out that 90% of these animals were Canadians.

In the following table * are shown the number of remount horses and mules imported from each country during the war :—

	Horses	Mules
United Kingdom	61,484	—
South America	26,544	—
Canada	14,621	—
Australasia	23,028	—
Austria	64,157	—
U.S. of America	109,978	90,524
India	3062	1114
Spain	—	15,229
Italy	—	7004
Cyprus	—	128
Uganda	—	306

The efforts made during the war to ascertain from Commanders the wearing qualities and suitability of the different breeds of horses, comprised in the above mass of material, are tabulated in the "R.C. Appendix 58," also in "C. of E. Rem. Appendix E. No. 14." At p. 218 of the latter report, is a criticism of the contradictory character of these opinions.†

No veterinary officers were asked by the Authorities to record their opinion, either on the suitability for work or soundness of the tens of thousands of imported horses. We are, nevertheless, in a position to furnish the opinion of one who saw more of every class of horse than any other veterinary officer in the country. Major Blenkinsop took full advantage of his appointment as Senior Veterinary Officer of Remounts, and we shall add his opinion ‡ to those expressed in the Reports above-mentioned.

The reports on *North American Horses and Cobs* were generally to the effect that they acclimatised rapidly, bore privation well, and were capable of looking after themselves. The big horses were not liked; as one officer expressed it "the rations won't

* "R.C. Appendix 38."

† Of three ship-loads of North American horses, all derived from the same herds, and sailing about the same time, two were reported as excellent, and the third as utterly unsuitable. "Under these circumstances it is difficult to know what to do." "Colonel de Burgh, C. of E. Rem., Appendix E., p. 360."

‡ Extracted from his Campaign Report (unpublished).

* This table only shows the actual casualties during the marches, and does not include [illegible]

keep any animal over 14·2 alive."* As a breed they were generally considered clumsy and not very sure footed.

Blenkinsop draws attention to the frequency with which the North American horses suffered from defective eyesight, especially cataract. Splints and spavins were common. Defective hock action, and excessively large flat feet were frequent faults. He notes the presence among these horses of a tendency for the limbs to give way on board-ship through standing, the knee curving backwards owing to rupture of supporting ligaments. This condition was not seen in other classes of horses, excepting in a few Hungarians. The bones and joints of many of the U.S. horses were wanting in development; and such animals suffered from sprain of the flexors or suspensory, if called upon to carry heavy weights for long periods. The length of the incisor teeth of these horses renders the question of "aging" rather difficult. They proved themselves hardy animals, soon recovering from debility and exhaustion, and rarely suffering from serious illness.

Russian Horses and Cobs. There was a consensus of opinion that this animal was too slow. He made a useful M.I. cob, but was of little use for Cavalry. Generally, the Russians are rough in their pace, hardy, and do well under exposure and short rations. Russian ponies, according to Blenkinsop, are very liable to bony diseases of the limbs; the feet are frequently defective, the wall thin and brittle. He is a hardy animal who fattens quickly, is very quiet to handle and ride, but an inveterate kicker. He can withstand long hours and short forage. The feet are very liable to congestion, especially when the animal is fat.

South American Horses and Cobs. These were generally condemned as slow, stubborn, clumsy. It is pointed out that good Argentines existed, and that only a few of the best were imported. General Elliott stated that "it is impossible to conceive a worse animal for service requirements," than those imported from the Argentina for the war, but that good ones exist. Blenkinsop describes the Argentine horses as very hardy, wanting in quality, and more fitted for slow draught than riding.

Canadian Horses and Cobs. These were generally reported upon as good hardy animals that retained their condition under stress of service. See also p. 112 of this History, which deals with the recuperative powers of Canadian horses. Lieut. Morrison † tells us that out of 137 horses, the strength of "D" Battery Royal Canadian Artillery, which landed in Africa in March, 1900, 66 were alive in the following November after a good deal of marching and fighting.° Blenkinsop regards the Canadian horse as more suitable for draught than for saddle. They were generally sound horses, and did good work in the Field. He notes the presence among them of roaring and the frequency of defective eyesight.

English Horses and Cobs. There was a consensus of opinion that the English horse required to become acclimatised before the best results were realised. The bigger he is the more unsuitable he becomes; he must be well fed.† "The English horses that, owing to good fortune, or to exceptionally strong constitutions, have not died before they became properly acclimatised, are the best horses for work in the Field"‡ (Col. Rawlinson). Another officer says:—"A bit of a fool when put immediately into the Field, as he has been so well cared for; he takes time to adapt himself to strange conditions of service, such as grazing, standing still, watering, etc., and is a bit like his British rider in that respect" (General W. Knox). Blenkinsop regarded the English horse as the most technically unsound of all those imported. He points out faults which render him a bad horse on service, *i.e.*, constantly kicking, bad grazer, difficult to drive in mobs, and slow to recuperate from debility and exhaustion the result of hard work. A very large percentage became roarers after they had been in South Africa any length of time. With all his faults he admits he was the best animal imported into the country, but he required feeding, careful attention, and protection from the weather until acclimatised. Blenkinsop notes the large percentage of horses shipped as English which were not so bred.

Australasian Horses These animals take a year to acclimatise in India, and they require time in

* Even the Remount Authorities must by this time have become convinced of the value of the small horse. In a letter to the War Office the Assistant Inspector of Remounts, S.A., under date 27th November, 1901, says:—"Even . . . keep demanding ponies, which are the only things they can feed enough to keep them alive." Nevertheless, in his report to the War Office, subsequently printed as a Parliamentary Paper, there is no mention of starvation rations.

† "With the Guns in South Africa."

° As an example of the vitality of the Canadian horse, he relates the story of one left behind for dead owing to exhaustion. The animal subsequently struggled along and came into camp, and the men gave him a cheer.

† Other information bearing on this point has already been sufficiently referred to at pp. 122, 133. From the large unsuitable horse, which the Director-General of the Veterinary Service urged the Inspector-General of Remounts not to buy, the Remount Department, with two years experience in the Field, had come down to the polo pony stamp, see footnote p. 122, also Cable 104, Cd. 963, to the War Office, which runs as follows:—"English horses arriving still too heavy. Well-bred, weight-carrying polo pony is the ideal required for all mounted troops, who now carry little on the saddle."

Well-bred weight-carrying polo ponies, to the number of 10,000 or 12,000 a month, were now asked for! Where was it supposed they were to come from, even if they could have been purchased at remount price?

The Court of Enquiry into the administration of the Army Remount Department, was the only body distinctly charged with the duty of inquiring into the question of whether the proper stamp of horse had been provided for the war. It is somewhat significant that Colonel Duck, whose evidence is given at p. 122 of this History, was never called before it, so that the initial blunder made by the Remount Department in providing, against skilled advice, a class of horse utterly unsuited to the country, does not appear in the Report subsequently presented to Parliament.

‡ In this connection, see the remarks, pp. 134, 135.

South Africa. All big and leggy horses failed; the others did well if given time. Like English horses they require to be well fed. They are slow at recovering from exhaustion, a bad feature in a soldier's horse. Australian horses are noted by Blenkinsop as liable to respiratory trouble, especially catarrh, and bilious fever. They require a long time for recovery after a voyage. The muscular development is imperfect, and they need long and continuous exercise and feeding before being fit for service. He regards the New Zealand horse as not only better developed but a far more useful animal.

Hungarian Horses. Universally condemned. Blenkinsop notes the "softness" of Hungarian horses, their liability to congested feet, to saddle and girth galls, their lack of physical development, and their difficulty in recovering condition after emaciation.

No special report is published dealing with the horse of South Africa, perhaps none was necesary. He was suberb, though our Remount Department would not look at him until compelled. * Colonel Thorneycroft, who raised and commanded an Irregular Regiment of Mounted Infantry during the war, told the Commission, "R.C. Appendix 52," p. 353, that a very large number of the original animals which came to him on raising the regiment *went all through the campaign.*† They kept their condition in a wonderful manner considering the hard work they performed. Many were small ponies, but "they seemed to carry the heavy weight with far greater ease to themselves than a big horse."

General Plumer ("R.C. Evid., *Q.* 18034"), in referring to the South African horse, said that nearly 30% of his were effective at the end of twelve months' service in the Field. This he attributed to there being time to get them into condition before war broke out. He stated that he himself rode the same horse throughout the whole campaign. "I hardly had another horse."‡ We have seen the character of the work in which General Plumer was engaged. Blenkinsop draws attention to the immunity of the South African horse to disease, his defective symmetry and conformation, and the surprising amount of work that a veritable weed could perform. Their peculiar short teeth and coarse grazing render their age very difficult to judge.

It is, however, quite unnecessary to bring forward any other evidence of the wonderful vitality of these horses, than that afforded by the stout and prolonged resistance offered by an enemy to whom marching on foot was unknown.

Lord Stanley, in the House of Commons' "bad horse" debate, previously referred to, struck one of the few practical notes which appeared throughout, when he stated "that the real secret of a good remount was condition." It is impossible to say whether a remount is going to be good or bad, whose physical condition is such that he is dead in a few days or even hours after being issued. He never has a chance of showing what he is made of. The remarkable divergence of views to be met with in the Appendix 58 of the Royal Commission, and that tabulated in the "C. of E. Rem.," App. E 14, can readily be explained on this basis. It was the previously hard condition of the "bus" horse which enabled him to recover rapidly from the sea voyage and put on a good front. Further, he was not hustled; the majority of these horses went to Natal where they had by no means a hard time at the early part of the war. It is not intended to suggest that "bad horses" were not sent from oversea.° The ill-selected, underbred, cheap Argentine could never have been anything but what he was, but he certainly never had a chance. The Hungarian "flat-catcher," even when conditioned, was not of the "cut and come again" type, and the big horse of any breed is a "bad horse" for war. Condition will help, but not remove, "sickle hocks," overshot fetlocks, "turned-out" toes, and long backs; nevertheless, the wholesale charge of "bad horses," heard within and without the House of Commons, represents in the main the loose expression of opinion of men, who, with no technical knowledge of a highly technical question, are led away either by their own ignorance or that of others.

We have no other object to serve than that of historical accuracy and fair criticism, whether to partisan or opponent. When the enormous numbers of animals purchased for South Africa are borne in mind, it is not a matter for surprise that "bad" ones were to be found. Does no dealer ever buy a bad horse? Does no skilled layman every buy one he regrets having taken? What, therefore, was to be expected when officers of limited or no knowledge of the work † were sent with a blank cheque to various parts of the globe, to learn at the public expense one of the most difficult branches of trade? If a merchant were compelled to send inexperienced men to buy tea and sugar on his behalf he would expect mistakes to be made.

* See pp. 123 (Statement by Q.M.G.), 131, 132, 133.

† The italics are ours.

‡ He adds that he only paid £19 10s. for this animal, and that his last march was one of 60 miles.

* The following are the official Cables, Cd. 963, in which specific instances of bad horses are reported:—

Cable 68. December 19th, 1900. "Hungarian horses condemned as 'flat-catchers' . . . . Big horses, especially Australians, last no time."

Cable 81. May 1st, 1901. "American horses arriving too leggy and loose made."

Cable 95. October 15th, 1901. Reporting on a consignment of horses from Australia says, "Attribute bad condition to class of animal. Big, long-legged, ragged-hipped, coarse horses. . . . ."

Cable 112. January 15th, 1902. Reporting that the horses of the Bays were of the wrong stamp to last in Africa. Asks for greater care in selection generally.

Cable 114. January 22nd, 1902. "Considerable percentage of horses landed lack compact formation . . Australian horses specially badly selected."

† See this History, p. 124.

We doubt whether the purchasing officers of no experience had any conception of the difficulty of their task. That they had no conception of their own ignorance is, we think, undoubted, for they were not compelled to accept the position. Further, did they not all belong to the mounted branches of the Service, which of itself, *from an Army point of view*, was a sufficient guarantee of a knowledge of horses? It was the fair price paid by the State and the enormous numbers purchased which saved the inexperienced buyer. It is absurd to suppose that when animals are being bought by tens of thousands only undesirables are presented. Had a better price been paid for the Argentine a better class of animal would have been obtained. The purchase of big horses must not be laid to the charge of the remount purchasing officer. The War Office fixes the standard of height, and from this scale the purchaser is not permitted to depart. We submit that the purchasing officers made a good average selection, for the reason that in dealing with such enormous numbers, ordinary care being exercised, an average must be reached which represents the horse of the country. It is presumed that the Authorities were satisfied that the horse of the country was suited for their work, or else the purchasing officer would never have been sent there.

In those cases, such as Hungary, where the horse of the country failed, the charge must not be laid against the purchasing officer. The only possible exception to this dictum is the horse of Australia, which was, from Indian experience, repeatedly reported as badly selected. But may not this have been due to the fact that the Australian horses employed by the Army in India are carefully selected, after importation, from four times the number required, and therefore do not represent the general type of the horse of the country?* It is stated, "R.C.", *Q*,13,065, that the purchasing officer in Australia rejected 50% of those presented for sale. Nevertheless, it appears to us that the price he paid was not sufficiently high to obtain a horse suitable for immediate use.

The smaller the numbers purchased the greater chance for ignorance and inexperience to demonstrate their presence. Few wars in the future, let us hope, will afford two-and-a-half years for the training of its remount officers, and experience extending to the purchase of half-a-million of animals; it must not, therefore, be imagined that we advocate the inexperienced and ignorant being sent purchasing in time of war. Where, however, are skilled purchasers in sufficient numbers to be obtained? Personally, we would select from amongst the largest dealers in the country, creating rigid safeguards, and giving them the salary of a Cabinet Minister while employed. Such a scheme would be economically sound.

The purchasing officer is not responsible for soundness; the cry of "unsound horses" was at times as frequent and undeserved as that of "bad horses." Some fifty cases of ringbone, for example, were reported to have been sent in a single consignment from Austria!* Imagine the amount of work required by the dealer and his agents, to "beat up" a sufficient number of cases of this disease to secure the passage of fifty through the first line of defence at the place of purchase? Extravagant charges of bad horses and wholesale unsoundness may be dismissed.

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* Lord Downe, in his "Report on the Remount Operations in Australia—Parliamentary Paper, Cd. 995," says:—

"The general idea in England is, that Australia swarms with horses, and that good horses are to be bought like rabbits—for next to nothing . . . . The breeders mostly breed for racing purposes, and thus the greater part of the surplus horses are weeds . . . ." In another part of the same report the Queensland horse is described as "light, weedy, and badly nourished . . . . totally unbroken and not used to be handled like paddock-bred horses. . . . ." Many of these found their way to South Africa.

"There are doubtless large numbers of good, useful horses bred, but beyond the local requirements and the Indian market . . . . which takes 6000 to 8000 horses a year, there has been no great demand outside."

In describing the difficulties of a Remount Agent dealing direct with breeders and small men, Lord Downe goes on to say that the general system of horse disposal in the country is by means of large auctions. "Is it possible at any public auction, where horses are sold at an average rate of one a minute, for an amateur buyer in a strange country to compete with professionals at their own trade, and in their own country?"

The trials, annoyances, hard work and hardships, of purchasing officers form no part of this History; they were very real. The good work done in the various countries has been buried beneath the obloquy created by the disastrous organisation of this service before the War. "Two Years with Remount Commissions," by H. Sessions, F.R.C.V.S., may be read with profit and pleasure.

* See Report "C. of E. Remounts," para. 203.

PART III.

There are several special features which could not be conveniently dealt with in the text, and these it is intended shall form the subject of this part of the History. Some, like horsemastership, have already been frequently referred to. The transport of horses by sea and rail; the care of transport animals in the Field; shoeing; sorebacks; epizootic diseases and their management; acclimatisation; poisonous plants, the supply and accounting for equipment, etc, are all questions which, considering their importance, it has not been possible hitherto to notice with sufficient fulness.

HORSEMASTERSHIP.

Under this designation is comprised the very large question of the care and management of horses under all conditions. It embraces every subject which contributes to the well-being of the animal, a knowledge of which is essential to his health and preservation. This information has to be gained by prolonged practical experience; it cannot be learned on a campaign, but only as the result of a previous apprenticeship. So ignorant are the majority of Staff Officers of this subject—from causes referred to at pp. 115, 192—that it is the exception to find amongst them any who, without previous experience in the mounted branches, or the instincts of a horseman, have any knowledge of the subject, or are aware of its extraordinary importance. The idea with such is, apparently, that if a man is able to keep his place in the saddle, everything connected with the care and management of the horse automatically follows. Unless this is the view held, it is impossible to explain the policy which brings thousands of irregular horsemen into existence in an emergency. Take the case of the 1901 Contingent of Imperial Yeomanry. We have it on the authority of Lord Chesham, Inspector-General of Imperial Yeomanry,* that 75% of the men had not been on a horse before they passed the riding school test at home, and that 25% had ridden very little. Apart from the question of sending such material as mounted troops into the Field—a matter which does not concern us—what is to become of the wretched animals of which these men are placed in charge? The Yeomanry of 1901 are not the only examples of this class of organisation; we have met with it in the regular forces, especially in February, 1900, p. 31, and in all cases it has resulted in a heavy loss of animal life and inefficiency.

It would seem, therefore, that the responsible authorities who call into existence mounted troops from untrained material, are unconscious that the horse needs certain essential requirements, which can only be furnished by previous knowledge, and unremitting care and attention.

It would be a fair assumption that regular troops, trained to the mounted service, should be able to show the result of their experience and knowledge of horsemastership, by the better preservation of their horses and a vastly lower rate of inefficiency as compared with those not so skilled. Unfortunately, during the South African campaign, this was not so; with the exception of the Artillery the mounted branches showed, with but few exceptions, a deplorable deficiency in this vitally important question; so marked was this that it formed one of the questions which the Royal Commission on the War was specially directed to investigate. Before referring to the results of this inquiry, it will be well to see whether any conditions existed before the war in the Cavalry arm, which can help to explain this astonishing fact. It is a long story with which this History cannot be burdened, but only the essential features stated.

As a matter of fact they have already been hinted at on p. 117. The original organisation of the Cavalry gave the individual officers no control over their horses or interest in their management; diet stable management and work were regulated by the colonel commanding the regiment, and the troop officers obtained no experience, but were tied down to a lifeless routine which was as well, and frequently better, carried out by the Sergeant-Major of the troop as by an officer. Under this system a horse could not be taken out of the stable without the colonel's permission. Shortly before the war all this was changed in principle, if not in practice. It is a very hard matter to effect a radical change in organisation in a day, especially in an old army like ours which lives on tradition, and is intensely conservative. Under the new system the squadron and not the troop became the unit, and squadron commanders were, at least in theory, given actual command of both horses and men, and held responsible for their training and well-being. It is no matter for wonder that many were by no means anxious for such independence, for it carried with it

* "R.C. Evid." Vol. i., p. 288, *Q.* 6731.

responsibility which came too late in life to be welcomed. Time therefore was necessary for the new ideas to develop, and for a new generation of officers to come into existence. This, perhaps, was only realised by the relatively small proportion of men in the world who think. Meanwhile, far-reaching changes were under consideration in connection with the horse question, one of the earliest being that the squadron officers were to carry out the training of remounts and prepare them to take their place in the ranks. To enable this to be effected it was recognised that previous training of the officers was essential, and selected officers were sent abroad to see how these things were managed in Germany, France and Italy. In these countries the squadron system was almost as old as the army, and it is quite true that under the conditions of military service in these countries a squadron system of horse-training had become so deeply a part of Cavalry organisation, that no difficulty was experienced in carrying it out, as opposed to the system in this country of having one expert in the regiment who trained the whole of the horses for the various squadrons. We do not defend the latter system; it was radically defective, but it gave each regiment a trained officer—who was the selection from among hundreds of men all specially trained by a long course of Riding School work—for the responsible and technical duty of converting the wild and raw material into the steady, handy troop-horse.

The officers deputed to visit the Continental armies brought back with them much valuable information, and some which was bad. In France they saw a handful of men and horses, the pick of many thousands, go through a Riding School performance such as would have been a credit to the finest circus in the world. The riding of these men is superb, the handling and management of their well-broken horses a something to remember, the whole carried out before a crowded house, with a solemnity and silence that an occasion of such dignity demands. It was a demonstration in the methods of the High School of Horsemanship, first developed in Italy during the 16th Century, before mediæval picturesqueness and pomp had found its natural limits.* The British delegates on their return from the Continent were enthusiastic of the new principles. It seemed, however, to escape observation that the Continental system of training was carried out by men who made the army a life calling, it was their profession. Their means did not admit, as with us, of coming to the Service for a few years and then retiring when it suited them;* they came to it for life, and accordingly, under long and skilful early training, became expert. The knowledge and experience gained by officers of our native Cavalry in India is identical in nature.

Among the absolutely bad principles in horse management brought back by the British delegates was that of the Continental system of stable bedding. It is usual from motives of economy (?) to leave the bedding down in the stables of France, Germany and Italy for periods of three or four months at a time; meanwhile, the dung and urine are covered over daily with fresh straw and well trodden by the horse into a firm, yet elastic bed, which grows. When it has assumed an inconvenient height it is removed, and the putrid condition of the material and its overpowering stench when the mass is opened up cannot be adequately described. This pernicious system of Continental bedding at once proved popular. The officers liked it; the fermentation of the mass kept the stable warm, and the saving in bedding gave them a larger ration of hay or corn to work with: the men liked it because it represented a fraction of the usual labour. The veterinary service condemned it as insanitary and destructive to the feet. British stable management had hitherto been regarded as the acme of perfection, the keynote of which was cleanliness.

By the adoption of this filthy system in our Cavalry stables, the hands of the clock of progress were put back. The authorities apparently unwilling to destroy the initiative the new squadron system was intended to encourage, took no action to abolish the disgusting practice. At this moment war broke out.

It is evident that the sudden transition from helpless inactivity and hopeless routine, to chartered and uncontrolled licence was bad, for the reason that the needful knowledge had not in the meantime become acquired. It would have needed twenty years to have changed successfully the working of the machine—it barely had as many months. In consequence, the Cavalry entered upon the war in South Africa not only with an in-

* At one time the Cavalry horse remained so long under training that his joints were partly worn out before he had completed his elaborate education. The bulk of his work took place in the School, the result being that, at the time we are speaking of, not 10% of the Cavalry horses would go alone. If a man was wanted from the ranks to take a message a volunteer had to be called for. All that has now changed, thanks to the younger school of thought. General Sir Douglas Haig (who was Assistant Adjutant General to the Cavalry Division during the War) gave the Royal Commission his views on the subject of the military training of horses:—

"The men must do less 'show riding.' The Riding School has come to be regarded as the end and object of our training, instead of only being a means to an end . . . . *Q.* 19,488. "There are only six things you want to teach the individual man in riding—to start his horse, to stop his horse, to back, to turn to the right and left, to circle to the right and left, and passage, and if he can do these six things, he is quite fit to go into the ranks, and you ought to be able to teach him these six things in four months."

* "The necessity for ample means [in the Cavalry] bars efficiency. A rich man seldom remains long enough in the service, nor can he be said to make it his profession; he consequently lacks the necessary incentive to advance himself."—Earl of Scarborough, "R.C. App. 23," p. 170.

In his evidence before the Royal Commission, Major-Gen. Marshall, an Artillery officer, in *Q.* 18,571, says the young officer "comes into the Artillery to make it a profession, and he is in every way encouraged to do so. It is not true of the Artillery officer that keenness in his work is unfashionable."—"R.C. Evid.," Vol. ii, p. 364.

adequate knowledge of the question of practical horsemastership, but were still suffering from the effects, and even continuing to labour under the vicious system, of centralisation and absence of authority.

The great contrast this presents to the Artillery arm may be gathered from the remarks on this question at p. 117. Here were two branches of the service, both men and officers respectively, recruited from the same class. Under the system of undivided individual responsibility and sound regimental creed, the one remained a self-reliant, self-contained branch devoted to the welfare of its horses; the other with no regimental creed, with no personal control, constantly looking to higher authority for permission to act, and ignorant what to do in its absence, began and ended in failure. These things cannot be learned on service; the principles, at least, must be brought into the Field.

In this matter of failure we write broadly. There were individual examples of fine horsemastership, and knowledgeable officers, who, given a free hand, developed to a remarkable extent, but these few were unable to leaven the mass, and above all the private soldier could not now be reached. The artillery driver has been taught for a hundred years to live for his horse, and that without it he is a useless encumbrance; the private of Cavalry was never so taught. He was trained to believe that his horse was a conveyance, that to be seen off its back was a dishonour and reduced him to the footing of an infantry soldier! He was never trained in the belief that his horse was his first and sole consideration. Individualism in the Cavalry soldier in this respect is required a hundred-fold more than in the Artillery, where teams work together under the eye of a non-commissioned officer. In Cavalry, men are frequently by themselves, away from the eye of a controlling superior. It ought ever to have been an established Cavalry principle that none but men capable of taking care of their horses would be retained in an arm of the service, which, for many reasons, is regarded as possessing attractions denied the others. Such, however, has not been the case.* To go back as far as the Peninsular War is quite sufficient for our purpose, it was a matter of notoriety how badly the British Dragoon looked after his horse, while the German Hussar working side by side with him had his animal fit.† At that time the Artillery were as particular regarding the care of their horses as they are to-day. They had a creed, the Cavalry had none. They had none in the Crimea. Lord Cardigan allowed the horses of the Light Brigade to starve rather than employ his idle regiments on transport duty, and if this was the spirit shown by the Commander it is no subject for wonder that it existed through all ranks. From the Crimea to the Egyptian Campaign of 1882 was sufficient interval to have placed matters on a sound footing, but nothing was done. A few days campaigning in Egypt saw the Cavalry disappear; underfed and overweighted they melted away like ice in a summer sun. Starved horses were seen standing next to a growing corn crop, of which those in authority failed to take advantage, for the reason, it is said, they did not recognise it was a forage plant, and perhaps because they were waiting for authority.

In other matters they showed an equal want of initiative, perhaps even interest. Sore backs, the bane of Cavalry, had never been systematically studied; the regulation method of dealing with them was to punish the man who rode the horse. As to the weight carried, it was not until some time after the Egyptian war that it was recognised as crushing, and equivalent to the weight of a second rider. In fact, there were old and responsible officers of Cavalry who believed that the greater the weight placed on the horse's back, the greater care shown by the rider to prevent it causing damage! The question as to whether the horse could effectively carry it never seems to have been considered, yet all these were hunting, and the majority, racing men.

The first real insight into what Cavalry were capable of accomplishing under skilled management was obtained in the Nile Campaign of 1884-85, when the 19th Hussars showed what horses and men could do under conditions as severe as can well nigh be imagined. The resuscitation of the Cavalry arm began from that small nucleus of earnest officers and well-trained men; crytallization had begun when the war in South Africa broke out; the crystals were small and imperfect, and readily dissolved on agitation; they soon received this stimulus and at the hands of the authorities.

Cavalry is a very expensive arm to create, train, and maintain. On arrival in South Africa the portion which passed into Cape Colony found that the rations for their horses was to consist of 10lb. grain and no hay, see p. 14, *et seq.* The hay ration was to be obtained by grazing horses where no grass existed. It further seemed to have been forgotten that, at enormous expense, the regiments had been sent out

* General Rimington, in his evidence before the Royal Commission, vol. ii., p. 585, says:—"I found throughout the war, with all sorts of troops, and all ranks, that care of horses comes naturally to very few men, except those brought up from boyhood with horses. As a rule, all other soldiers only do what they are compelled to do, and at best regard the care of their horses as a very weary and irksome necessity."

† "Military Opinions," Field Marshal Sir J. Burgoyne; "Diary of the Waterloo Campaign," Captain Mercer, R.A. Sir John Burgoyne said that the difference in care bestowed on the horses by the British and German Dragoon was so great, that the German Legion could always put 100 horses in the ranks to our 10.

Mercer says the great distinction between the German and British Dragoon was the affection for and care of the former for his horse. The German would sell everything to feed his horse, while the British Dragoon looked upon the animal as a curse and source of perpetual drudgery to himself.

to fight, and that grazing was a slow process * which could only be carried out during the day, at which time they were occupied with the business for which they existed. Over and over again in this History has attention been drawn to this question, and there is no need here for further elaboration, the point is self-evident. The action of the authorities was viewed with dismay. Every application for hay was met by instructions to graze, and for an increased corn ration by the reply that only a single line existed, the capacity of which was limited. Is it any wonder that under these conditions the daily wasting of horses from circumstances beyond the control of those in charge was viewed with something approaching indifference? It is difficult to maintain interest in the condition of horses which are being deliberately semi-starved by authority, in spite of every representation! Anything in this connection more appalling cannot be imagined, and as our History shows, before the Cavalry Division had reached Bloemfontein its trained horses had disappeared. This system of horsemastership was not calculated to stimulate the zeal of officers or men, and among other far-reaching pernicious effects, it fostered a spirit of indifference. The liberal supply of horses put the final touches to this hopeless picture. Who can possibly declare the horse supply to have failed who has read the figures contained in these pages? It was good, far too good, and led, as all excess of supply leads, to waste. The moment officers and men realised that another horse was forthcoming when the present one was ridden to a standstill, care was thrown to the winds. They were not ignorant of the fact that the animals so supplied were hopelessly unfit; that was not their responsibility, for they were powerless to prevent the issues. The traditions of their service fostered indifference. It is difficult to find a word which expresses their acquiescence in men sitting on their horses' backs when they ought to be standing on their feet, or leading their horses on the march; or of squadrons not grazing, if even only for a few minutes, while standing in long grass waiting for orders; or of passing a water supply without slaking their horses' thirst; of taking no systematic steps to prevent overloading the animal with unauthorised material, a thing every soldier is liable to do on service. The produce of a neighbouring farm hung to one side of the saddle causes it to heel over and press on the withers; a chair for firewood hanging from the rear arch, or a farm door resting on the root of the neck, are not features which can escape observation, and are totally ruinous to horses' backs.

The want of kindness shown by men to their horses cannot have escaped the notice of their officers. The utter want of sympathy with animal suffering; the extraordinary indifference of the soldier to the welfare of the horse on whose powers of endurance his life may at any moment depend; the vicious spurring and "jabbing" in the mouth at every fault, show how much there is yet to inculcate if animals on service, be they well fed or starved, are to receive humane treatment at the hands of those to whose care they are committed (see p. 79).

To avoid any possible charge of bias, it is desirable here to reproduce a summary of the evidence of some Commanders in the war on the subject of Horsemastership, taken from the Evidence in the Royal Commission.

Lord Roberts, himself a horsemaster, said it was not sufficient that Cavalry or Mounted Infantry should be able to ride, but they must know how to get the utmost out of their horses by good treatment and never-failing consideration of their wants. "Until the soldier is held directly responsible for, and takes a personal interest in, the condition of his charger, until he learns to rely on his own common sense and experience, not merely on the orders of his superior, that this condition is maintained, our horsemastership is sure to be indifferent." ‡ We have seen in this History † the steps he took in this matter almost as soon as he landed, and the orders published, not only as regards horses, but mules and transport oxen.

Lord Kitchener stated that the care of horses required more attention; he said it was difficult in time of war to instruct men in horse management, and that they should receive more careful instruction in this matter during peace. ‡

General Buller said the horsemastership was bad. **

General French stated that the regimental officers and men were very careful of their horses, but their training was too narrow; they understood stable management better than the care of horses in the Field. Of this he gave examples of the want of knowledge in the selection of grazing ground at the early part of the war, through ignorance of the African veldt; the want of knowledge how to utilise the food grains, such as barley, maize, wheat, to be found on farms, by either overfeeding with them, and so causing digestive trouble and laminitis, or neglecting the available supplies through excessive caution. Horsemastership in the Field, he states, is altogether a matter of feeding. ‖

General Lord Methuen, speaking of Yeomanry and Colonial horsemastership, said they had no idea how to save a horse or nurse a tender back. He found by marching instead of re-mounting the dismounted men that their care improved. §

* It takes a horse one hour to eat three pounds of hay. When he has to find his fodder and cut it himself, he will naturally eat less than this in a given time.

* R.C. Report, p. 45.
† Pp. 54, 75, 144, 195, 196.
‡ R.C. Report, p. 47.
** R.C. Evid., *Q.* 15,494, p. 212.
‖ Idem, *Q.* 17,129, p. 301; *Q.* 17,208, p. 305.
§ ,, *Q.* 14,219, 14,220, p. 123.

General Ian Hamilton could not see much to choose between the horsemastership of the Cavalry, Mounted Infantry, Oversea Colonials, or National Scouts. He adds that the only class of men he met with who were constantly and eagerly on the look out for a chance to save their horses and give them a bite of grass or a drink of water, were those South African Colonials who rode their own horses.*

General Hunter stated that in the Mounted Infantry a man who was suddenly taken off his feet and put on a horse needed to be taught horsemastership; horsemastership indicates previous training, you cannot be a master without learning.†

General Gatacre held that the knowledge of how to save horses comes with experience; it cannot be taught in a year or two. Much training is required to teach a man to be in sympathy with his horse.‡

General Bruce Hamilton believed that horsemastership is very much a question of discipline.**

General Warren thought that officers of all ranks were not sufficiently taught about horses, and suggested that if every officer could shoe a horse, and know something about the ways of one, things would be much better.††

General C. E. Knox said the Mounted Infantry must be taught how to look after and take care of their horses; in his opinion they do not know anything about this, and the Cavalry were much the same.‡‡

General Rundle said the horsemastership was very bad. It was impossible to get the men to dismount from their horses when halted; they would sit on them for half-an-hour unless somebody told them to get off. The experience of this witness was confined to irregular mounted troops.‖

General Plumer believed that horsemastership and discipline go hand in hand. The man must always be thinking about his horse.§

Colonel Haig (D.A.A.G., Cavalry Division) said all ranks in the Cavalry must be taught to realise that the horse is their chief arm and how to look after him in the Field. Hitherto there has been too much pampering in peace time.*,*

Brig.-General Rimington. This officer early in the campaign drew up "Notes on Horsemastership," in which he emphasised the necessity for supervision by officers; grazing at every possible opportunity; men never to sit on their horses at a halt; to off-saddle at every opportunity, if only for five minutes; the kit on the horse to be reduced to a minimum; men to dismount and walk down (but never up) all hills. Men giving horses a sore back to be made to walk. In his evidence, General Rimington, in referring to the Mounted Infantryman, said, "when put on a horse, he did not know what to do with it," and added, that a man once said to him, he "did not know whether to feed it on beef or mutton."*

* R.C. Evid., *Q.* 13,941, p. 110.
† Idem, *Q.* 14,590-1, pp. 138, 139.
‡ Idem, *Q.* 16,772, pp. 272, 273.
** Idem, *Q.* 17,468, p. 313.
†† Idem, *Q.* 15,779, p. 229.
‡‡ Idem, *Q.* 17,579, p. 320.
‖ Idem, *Q.* 17,885-6, p. 331.
§ Idem, *Q.* 18,097, p. 341.
, Idem, *Q.* 19,299, p. 404.

* Idem, *Q.* 12,652, *et seq.*, p. 27. This cavalry general's evidence is of such importance, that we reproduce a fuller summary than the above. At the outbreak of the war he raised an irregular Corps of Scouts; he gave the Royal Commission an outline of his orders on Horsemastership, which were drawn up for their guidance:—

"Grazing was resorted to at every possible chance. The moment a man gets off his horse he throws the reins over his horse's head, and the horse stands and grazes, which makes him quiet for dismounted work and so on, and he is also nibbling whenever the man is dismounted.

"The men are never allowed to sit on their horses at a halt. That was a great fault with most troops, and wants some legislation. I mean to say that we ought to try and get a rule about that in future, that a man should never sit on his horse at a halt. The ordinary cavalry soldier does; he gets into a habit of it in the Riding School.

"The horses were off-saddled at every opportunity, even for five minutes. Our saddles were light, we had not much on them, it was no trouble to the man to unlace the (cynch) girth. We had no breast plate or crupper. . . . . In the retreat from Sannah's Post my men off-saddled while the Boers were pressing us so . . . . and were watering and feeding them. The Boers were very near, and things were pretty tight, but the habit was a good one. I was rather annoyed, because I thought we should not get away. I thought it was playing it rather fine.

"The kit carried on the horse was reduced to a minimum. That is absolutely necessary in any mounted operations; you cannot do anything if you have a heavy kit on the horses . . . . It was the ordinary shooting kit that a man would go out in to shoot buck. . . . . At the end of the war we reduced the Cavalry Kit in my regiment to the same thing.

"The men were made to dismount and walk down (never up) all hills. . . . . It is no good taking the man off the horse when he is going up hill . . . . because the saddle gets well shifted back, which is a good thing, and a man does not mind walking down hill; whereas, if you put a saddle and big weight on your horse going down hill, you distress it more than by going up hill. . . . . If you are scouting you want to be on the horse going up hill, because you do not know what is going to happen when you get to the top. When you are at the top you have seen what is there."

It is important in this respect to learn the difference between cavalry and artillery horsemastership.

Colonel Davidson, in his evidence before the Royal Commission:—*Q.* 18,660, in speaking of artillery operating with cavalry, complained that the artillery had insufficient halts.

"If anything goes wrong with a cavalryman's horse he can stop and put it right, and canter up and rejoin his squadron:" but if a horse in a gun is beginning to get wrong, unless you have a halt, and can take him out and put another one in, or readjust his harness, that horse will begin to hang back, and he will kill the other five horses in that team. I do not know that I am allowed to say exactly what I think, but I think that killed a great many splendid horses which, with the best of horse-management, would have done the whole campaign. We sometimes went 25 miles with only two halts, whereas, by trying more to

General Baden Powell regarded efficient horsemastership as essential to the success of Cavalry. He urged that it cannot be picked up at once by hastily organised troops. It is a matter of experience and training, but even yet requires developing in the Cavalry.*

General Brabazon. The evidence of this officer had better be given in his own words:—

"I really believe, although I say it, that I was the only man, certainly the only General Officer, who tried to stop the abuse of horse-flesh. I never saw such shameful abuse of horse-flesh in the whole course of my life as existed throughout the whole campaign, and not an attempt was made to check it . . . . One never saw an irregular man go except at a gallop, he thought it was the normal pace for a horse . . . The horses were abused in every sort of way, and there was no attempt made to check it. I tried my little best with the draught animals and with the mounted troops, but could not do much. I was shocked, I was horrified. We might have saved at least 25 if not 50% of our animals if proper care had been taken of them. But that must come from the head; everything filters down from the top, from the head, and I do not think from the very tip-top of the whole lot they cared twopence how horses or draught animals were abused." †

The pages of this History show, in the reproduction of the orders bearing on the care of animals, that this matter had not been neglected as the witness believed.

The Earl of Scarborough handed in a Paper to to the Royal Commission, entitled "Secretary of State for War's Scheme with regard to the Yeomanry." In this he says‡ "As a rule officers (Cavalry) are bad horsemasters, having no idea of taking care of their horses. This important part of their duties is utterly neglected".

The extracts made from the evidence of the above officers point very conclusively to the fact that the care and management of animals left much to be desired in all branches, excepting the Artillery. On the latter point there was a consensus of evidence as to the care and devotion shown by all ranks,** which, as we have seen earlier (p. 117), is due to an admirable regimental system over a century old; positive proof, if any were required, that this information can only be gained during peace and enforced by discipline. *

In summing up the question of horsemastership we have seen that the mounted Infantry failed owing to their ignorance of the work; the Cavalry through the effects of a vicious system, abolished but not obliterated when war broke out, which placed the management of its horses in peace in the hands of the Colonel and Adjutant and in war in the hands of the Squadron Officers.

We have attempted nothing more than to deal with the question of Horsemastership in War as a whole, the details can unfortunately find no place in these pages. A simple and safe method of picketing is still required. The necessity for blankets has yet to be decided, and their possible advantage placed against their weight, especially when wet and muddy. The transport they occupy would be far better devoted to the carriage of hay. As to the extra comfort they afford, a third of them are under the horses feet at night, and there is no practical method on Service of keeping them in their place. As a means of spreading contagious skin disease they are unrivalled. Moreover, the well-fed horse, unclipped on neck, shoulders, back, loins and quarters does not need one. Colonel Thorneycroft, in a Paper laid before the Royal

halt where there was grass, and letting the horses get their heads down, we should have done the whole of that march without losing any horses."

Q. 18,663. "If you trot through heavy sand, you knock your horses up; if you trot up a steep hill, you knock your horses up; but if you walk up a steep hill, and take advantage of the ground being with the collar—I am only talking of wheels, and not of cavalry horses,—in that way you can save your horses, so that you can do your work, and especially halting where there is grass, instead of halting where there is no grass."

Q. 18,673. "The cavalry must give the pace, but cavalry can often crown hills first, and they might let the artillery come up slowly, whereas, we marched absolutely dressing with the cavalry the whole way. It is a question of treating the wheels on the march according to the nature of the ground."

* R.C. Evid., *Q.* 19,820, p. 425.

† Idem, *Q.* 6908-9, p. 296.

‡ R.C. Appendix No. 23, p. 170.

** In the "Report of the Royal Commission on the War," p. 47, para. 82, it is stated "It was generally agreed that the Royal Artillery knew how to take great care of their horses. . . . . "

* It must not be supposed that the organisation of the Artillery has saved it from making huge blunders. It is as conservative as every other branch of the Army; the spirit of what was good enough for one's grandfather is not the spirit of progress. Great Britain woke up one morning to find that its Artillery was obsolete, and of no more use against modern Artillery than a pop-gun. The Artillery had held on to muzzle-loading guns when every single nation in Europe was armed with a breech-loader. It held on to shaft-draught as being essential for guns when all the Artillery of the world used pole-draught. It used collars and enormously heavy harness when other nations were employing breast-harness, and the lightest material in construction. It did not change one of the above features on its own initiative, but only under the pressure of dire necessity. It has, indeed, been said that until recent years harness and fat horses formed a far more important part of the Artillery creed than guns. Certain it is they went to South Africa with ammunition which was defective in range, and had to wait for months, until a fuse could be manufactured at home, before they could compete on equal terms with the Republican Artillery. [See Report Royal Commission, p. 91. On p. 92 the Commission says that the War Office were unable to devise a good quick-firing gun, but during the War purchased from German makers "real" quick-firing guns, and used them as a model.] These facts are mentioned to indicate that a life devoted to ceremonial and playing at fighting will ruin any fabric, and that medical and veterinary officers can never feel too profoundly grateful that their training does not consist in "playing at doctoring." The stern reality "keeps their hands in," and daily trains their judgment; this is the reason why, if given a proper organisation, no excuses for failure on Service should be admitted. The fate of the Departments of the Army lies largely in the hands of those who are demonstrably unable to look after their organisation and technical requirements, or to keep abreast of modern discovery and invention.

Commission, Appendix 52, p. 354, says that he does not consider it advisable to rug M.I. ponies, it renders them liable to chill. Nor does he advise clipping unless the coat is in such a condition that it cannot be cleaned.

I entirely agree with Colonel Haig in the remarks he makes, referred to at p. 237, on the pampering of troop horses. It is not the weather which kills horses, but starvation and overwork. No troop horse in health should ever know the feel of a blanket; he is born clothed, and his early life spent in the open, exposed to the elements without cover, did not kill him nor could it. If a blanket is essential, why not a hood? If there is one part on which a horse hates rain it is his face. Bandages will next be required?

Reams of official correspondence exist on the question of blankets, but no one in authority has taken up an infinitely more important and practical question—that of nosebags. The present pattern of nosebag, used in civil and military life, is a disgrace to our inventive genius, it is merely a vehicle for wasting a quarter of the food. The army nosebag is still worse, as it has been sacrificed to appearance. It is infinitely too small, of the wrong shape, fragile where strength is required, and in consequence lasts but a short time. We complain of short rations, but never of the waste-producing, leaky, dirty contrivance in which they are placed for consumption. It would be a sound measure of economy for the Secretary of State to offer a prize of £1000 for a practical method of feeding horses without a manger, and without waste. Think of the trouble and expense of carrying forage immense distances, to be wasted on the ground when it has reached the horses for which it is intended! The questions of nosebags and picketing are two of the three most pressing necessities for horses in war, compared with which blankets are a trifle and a luxury.

ACCLIMATISATION.

When men and horses are sent abroad to fight there is no time to wait until they are acclimatised. Nevertheless, in the case of the horses sent to South Africa, more than that of the men, acclimatisation was an important physiological process, for the animals landed either with a winter coat in an African midsummer, or a summer coat in winter; apart from all other considerations a physiological re-arrangement on this account had to be made. It was notorious that many of the horses landed, even before Christmas, refused to change their coats for several weeks. The mutation of the coat as a seasonal adjustment is not everything; the digestive functions of the horse are notoriously delicate, in spite of a certain ignorant saying to the contrary. A sudden change of food, corn or fodder, is a most disturbing element to his interior. A new grain suddenly introduced cannot be digested, and when horses refuse it and prefer starvation, they are exhibiting a protective instinct. A change in grain may lead to laminitis and other troubles due to causes we need not here consider, while a change in herbage may be followed by considerable gastro-intestinal disorders. Even the horse of South Africa will not tolerate a sudden change of pasture, as we have seen at p. 202, and only the "karoo" pony can utilize the bush which is so irritating to a new comer. A change in water is probably more insidious in its effects. A good deal of the water in parts of South Africa is brackish and that from wells frequently very hard; both storage and river water suffers under the effects of being churned up in the process of watering, by which a large amount of mud in suspension is swallowed. To animals which have been previously consuming water of unimpeachable purity, such changes as these must create not only intestinal irritation, but alterations in the physiological process of urine-secretion.

Life in the open is the natural existence for all domesticated animals, but circumstances not connected with health, as many think, demand stabling for comfort. The stabled and pampered troop horse * found himself in South Africa suddenly exposed to scorching sun by day and drenching dews by night. His long English winter coat was burned brown or came away in patches, and was clogged with sweat and dirt. His rest on shipboard had robbed him of such muscular fitness as he possessed, and he sweated and groaned under his 20-stone load. We made no concessions to him on account of these matters, though he was a stranger in the land. He was turned out to graze but did not know the meaning of it, † and abused his freedom by stampeding. Prevented from stampeding by knee-haltering, applied by equally ignorant men, his leg was cut or the limb otherwise damaged. He shivered and shrunk up in the rain, and the absence of generous feeding, hay and and water, soon left him a shadow of his former self.

A difference of opinion exists as to the length of time it takes for an animal to acclimatise in South Africa. By some two months was considered sufficient, ** but it may be safely stated that in the case of the horse a year is not too long a time, until, as Colonel Blenkinsop originally pointed out, the animal has learned to change his coat correctly. Men are very much inclined to measure horses by themselves; a horse is a far more delicate animal, and much more readily upset and killed. Assuming a year to be none too long for the important changes indicated above to occur, we may say that very few horses lived long enough in the war to be physiologically acclimatised. Among the causes,

* Haig ("R.C. Evid.", p. 404, Vol. ii.) says: "Hitherto there has been too much pampering in peace time."

† See pp. 14, 29.

** General Butler believed that at least two months were required to get used to the conditions of water, food, and altitude, and that four to six months were preferable. See *Q.* 5304, "C. of E. Rem. Evid.", p. 174.

then, contributing to inefficiency was this one of want of acclimatisation.

The question, however, is whether it would not be possible during peace to render animals less susceptible of exposure and hardship when taking the Field? We firmly believe this to be the case, and would indicate as one measure the system of feeding on a mixture of grain rather than exclusively on one, as not only being more economical during peace, but preparing the way for the varieties of grain rations met with in war.

The softening of fibre resulting from pampering should be eradicated. No troop horse should wear a blanket so long as he is in health. No troop horse should be clipped all over. Sufficient hair may be taken off the belly, brisket, thighs and arms to counteract sweating and facilitate grooming, and yet without necessitating the use of blankets. There is no occasion for troop horses to resemble in appearance the artificial product of our hunting and racing stables. He is neither hunter nor racehorse, or he would never have found his way into the ranks. He should be the natural product of common-sense management, and not the residue of an artificial and unnatural life. His stable should only mean protection from rain and wind, such as he endeavours to provide for himself when living freely in the open; here he gets under a hedge. There should be no windows capable of shutting, no doors capable of closing, no light which can be cut out, no reeking putrifying "Continental system" of bedding to soften and destroy the horn of the feet, and by fermentation to produce sufficient heat to raise sensibly the temperature of the building. There should be but one or two degrees difference in temperature between the air of the troop-stable and the outside air, bearing in mind that the sole object of the stable is not to provide an oven for the animals to live in, but shelter from wind and rain. From this it must not be supposed that either wind or rain kill well-fed horses living in the open; it has no effect excepting that of making them look utterly miserable. If wet weather continues animals lose condition from the utter inability of feeding them properly, the material is blown away or trampled in the mud. Stabling is therefore economical, it is also sanitary, for bodies of horses cannot be kept standing constantly on the same ground, but it is not an essential to well-being, and the temptation to convert it into a house should be resisted in every way. Common-sense must be invoked in order to avoid the temperature feelings of animals born permanently clothed, being confused with those of the animal born naked.

We do not ask that Army horses should live in time of peace under conditions resembling a campaign, but that the system of protection should be Spartan in its simplicity, and every endeavour made to render their buildings as much as possible like the open air, without its drawbacks. The feeding in peace time is defective because, as we have seen, we feed on one kind of grain only; better feeding would be obtained for the money now spent by using a mixture of grains, the advantage of which to the troop horse has been previously referred to.

A remarkable degree of body-delicacy results from pampering: perhaps it receives its highest expression in the dog. The moment man brings animals under his care he is inclined to fashion their lives on that of his own, which, in the main, is a perpetual striving after comfort. *

The effect of sudden change of altitude on animals is not known. Probably, for altitudes up to 5000 feet, the actual reduction in atmospheric pressure is rapidly compensated. Altitude, it seems to us, is less a source of trouble *per se* than its concomitants. The lowered temperature, for instance, may be more important than the reduced pressure, but doubtless the different vegetation found at various levels is a far more serious cause of difficulty to the herbivora than either the temperature or pressure. At very high elevations there is a difficulty in breathing owing to a reduction in the oxygen content, but no such altitudes as these were met with during the war.

FARRIERS AND SHOEING.

Had South Africa been a country where the wear and tear of shoes was considerable, nothing would have prevented an entire collapse of the military arrangements within three months from the date of taking the Field. The fates treated us kindly in this matter; there were no metalled roads, there was plenty of soft going, a veldt which polished the shoes like silver, and no serious rain until Bloemfontein was in sight. It is true there is a good deal of rocky ground in places, but it is short lived and mere outcrops; stones and boulders abounded almost everywhere, but these do not wear shoes out, though they tear them off, and may bring tired horses down. The fact is that shoes which last barely a month at home during the idleness of winter, lasted three months in South Africa, and often remained on until they dropped off.

The explanation of this latter fact was the paucity of the staff of farriers with the Army, or more correctly, the bad system under which this staff was employed. Shoeing in our Army has been carried out by a regimental system as long as mounted troops have existed. Over a hundred years ago the farrier was not only the shoer of horses but the veterinary practitioner. He acted as such so badly that in 1796 it was determined to replace him by a properly trained man, and from that day onwards he has been the technical assistant to the latter, and the shoer of horses. He is a regimental man, holding first an appointment as shoeing-smith, and if promoted receives rank. He has nothing to do with horses outside those of his own regiment, nor can he be employed to do anything for an animal the property of the public not belong-

* In connection with this the remarks on p. 239, dealing with blankets, may be consulted.

ing to his own unit without the approval of his Commanding Officer.

When mobilization occurred every regiment of Cavalry had three Sergeant-Farriers, and eighteen Shoeing-smiths. Every Battery one Sergeant-Farrier and three or four Shoeing-smiths, dependant upon whether R.H.A. or R.A. These men were not only craftsmen but soldiers; they took their place in the ranks as such, and carried out their technical duties afterwards. In the Artillery and Army Service Corps they are not only shoers of horses and assistants to the Veterinary officer, but also Carriage-smiths. Each Farrier and Shoeing-smith, therefore, performs the duties of two men, soldiers in the Field and tradesmen in bivouac. Each should have, as fortunately most of them possess, an iron constitution, for he has twice as much work to perform as any other man in the British Army, and he has attempted to carry out this double function with a loyalty and devotion beyond praise.

It is fortunate, however, that the wear of shoes in South Africa was light, or it would have been impossible for the staff, as organised, to have carried out the shoeing. No man can be in the presence of the enemy, or marching, all day and shoeing all night. This is what we mean in the opening statement of this section—that had the Army been dependent upon shoeing for its movements, a breakdown would have occurred in less than three months.*

The proportion of Farriers and Shoeing-Smiths to horses during peace is in excess of requirements; this is due to the fact that these men are counted as soldiers in the ranks. If their numbers in the ranks were reduced, the State would have to sanction others to take their place. From a regimental point of view no reduction is therefore possible. In war the numbers are sufficient for the purpose for which these men are engaged, provided that they are not otherwise employed. It can be seen from what has been stated above that the Farriery Staff is overworked, and that the duties assigned to it are always largely in excess of that of the other members of the rank and file. In addition to being soldiers and farriers, they are, as we have seen, charged with a third function, *i.e.*, in subordinate charge of the sick horses of their units under the veterinary officer.

This brings to light one of the many difficulties of their position; they have to serve two masters, the battery or squadron Commander, and the veterinary officer attached to the unit. It is astonishing the loyalty they show to both, even when aware of the differences of opinion which at times arise between the unit Commander and the veterinary officer in connection with the care of horses.

Another and distinct group of artificers concerned in the horse-shoeing question, are the hastily trained "cold shoers" of units; these are men who have been induced by a premium to qualify to nail on a shoe which they are practically unable to fit. Their number per unit is a variable quantity, and depends generally upon the interest taken in their training by the unit Commander. There may be many or few. They leave the forge after a few weeks' instruction, and their chief use is to replace shoes in the field, especially in Cavalry when the squadron is working in detached portions. These men have their marked limitations, but are useful under pressure of work. They are never employed when better qualified assistance is at hand, and once they have left the forge their subsequent connection with it is purely nominal.

When an army passes from a peace to a war footing the number of animals with units is increased, and in addition units are created which have no peace representation, or but little. For these no farriery service exists. The account given in these pages of the events of the war will best illustrate the case. A transport was created consisting of thousands of mules: for the shoeing of these animals only the small number of men with the transport on a peace footing were available. Regiments of Mounted Infantry were created, and thousands of animals brought into the service; for the shoeing of these not a single man existed, excepting the few trained in peace as cold shoers of regimental Infantry-transport. Scores of irregular regiments were created with hardly a trained farrier amongst the whole number, and to these may be added remounts by tens of thousands, for the shoeing of which no provision existed. We have referred at p. 21 to the difficulties existing at the outset of the campaign in providing farriers for irregular regiments. That the local knowledge of some of the Commanders of these enabled them to know where to recruit farriers is undoubted, but that this never met the whole trouble is equally certain. Fortunately the colonial animal ridden by these men rarely requires shoeing behind, which reduced the amount of work by half. At the early part of the war some army farriers were lent to the first regiments raised, but this was only a part of the general policy of robbing Peter to pay Paul, for these men were required with their regiments. The Colonial Commanders were exasperated by being informed that they must make their own arrangements for shoeing, as if the material, possessing all the needful qualifications, were always on the spot and only needed to be embodied.

The losses among Farriers and Shoeing-Smiths in the Field are difficult to obtain separately, as they are mixed up with those of the rank and file, but early in the war a Cavalry Brigade lost in three months nearly 33% of its shoeing staff, and two Cavalry Regiments and a battery of Horse Artillery lost over 43% in six months. The total number of men in these two groups rendered inefficient was 39, of which:

2 Died,	10 Sick,	4 Wounded,
4 Captured,	19 Invalided.	

* Colonel Haig, the Adjutant-General of the Cavalry Division, in his evidence before the Royal Commission, Q. 19,299, p. 403, stated that many horses were left unshod from the day they embarked, and that time and men were lacking to shoe remounts before marching.

The general wastage of men per annum during war is calculated at 60% for Infantry, 50% for Cavalry, and 40% for Artillery.* The groups of Farriers, etc., quoted above, are too small to enable the facts of the general loss to be stated in positively definite terms, but there can be no shadow of doubt that the wear and tear amongst this class of soldier is higher than in any other branch, and the reasons for this have already been stated.

The remedy is simple. Farriers and Shoeing-Smiths should be kept wholly for technical duties, and should not be included among the fighting numbers. Their place should be with the transport, in order to be kept as fresh as possible for the work which awaits them in the next bivouac. With such a scheme fewer men could do the work. If a man shoes an average of four horses a day with machine made shoes requiring little alteration, he may be regarded as having earned his pay and keep. On such a basis six men could easily keep a regiment of Cavalry shod.

The staff of Farriers and others maintained during peace and war has no definite basis; in Cavalry it averages 28 horses per man per month in peace, and 26 in war. In the Artillery the proportion is reversed; in Horse Artillery, during peace, 27 horses per man per month, and during war 46; Field Artillery 22 during peace, and 36 during war. The proposal above made admits of a man shoeing from 90 to 120 horses a month, but for safety it is best to take the lower figure. If the squadron be taken at 150 strong in peace and 160 strong in war, two men should be able to keep these horses shod. At present, for this purpose the staff is five in peace, and seven in war. The proportion of Farriers taken into the Field must always provide against accident, disease and pressure of work. A shoeing staff of three men per squadron should leave a margin to meet all difficulties (see p. 243), provided they are taken care of instead of being worn out by overwork and exposure. No other soldier in the army has, on returning from the Field, to take off his coat, after a long tiring day, and begin the job for which he has been trained, while his comrades are resting and sleeping. The scheme of reducing the shoeing staff and putting it with the transport is economically sound.†

There ought to be a Corps of Farriers administered by the Army Ordnance Department, in the same way that it administers the Corps of Armourers. These men should be for shoeing only, and not mixed up with the dressing and treatment of the sick. They should be posted to regiments for duty, but not to belong to it. They should be under the orders of the Squadron Commander, for he alone is responsible for his horses. For emergency work in the Field the regimental cold shoer should continue to be trained as at present.

Another point that needs consideration is the formation of a Reserve of Farriers. There is practically no such thing in existence. One should be formed, not only to meet the wear and tear of service in the Field, but to provide for those units which only exist or are created during war.*

With the Cavalry Division under Lord Roberts on the Modder River there were not less than 200 Farriers and Shoeing-smiths, yet not one of these men could be detailed to shoe M.I., Transport or Remount animals. These had to go without shoeing. Such a state of affairs could not continue indefinitely; the engagement of civil farriers was at first hinted, and by 11th April, 1900, a reality. A few men were at first engaged, but they did little towards lessening the mass of neglect in shoeing. They were engaged at a rate of pay which would have turned the head of an infantry subaltern. They received at first 10/-, and later 12/- a day pay with rations and quarters, and were engaged for three months. They were of all classes—Jews and Gentiles, Poles and Dutchmen; where they all came from was remarkable, and though there was little means of testing them before engagement, there were very few downright failures among them, though there were very many weak vessels. At first these men were kept in standing camp, later on many of them volunteered to accompany the troops, and remained for months in the Field. Some hundreds of civil Farriers were thus employed from time to time; by June, 1901, there were 100 working for Remounts alone,† and by the 31st May, 1902, the number of civil Farriers with the Remount Department had reached 175.‡ The numbers with hospitals and columns are not known, but certainly not less than another 200. The increase in numbers followed as the strength of the army in horses was increased, and as the military Farrier and Shoeing-Smith gradually disappeared.

Anything more expensive than this system it would be hard to imagine,‖ furthermore, it filled the Army Farriers with discontent to see a civilian earning a rate of wage in one day that he could barely get in a week.

* See R.C. Evid., *Q*, 4453.

† Colonel The Marquis of Tullibardine stated before the Royal Commission that he considered the lives of the Farriers of the Scottish Horse to be too valuable to place these men in the fighting line, so that as far as possible he kept them out of it. He pooled the whole of his shoeing staff, and under the Farrier Major these men carried out the shoeing not by squadrons, but regimentally. In this way the work was equally divided. It was no question of whether a horse belonged to the man's squadron or not. This excellent practice might have been adopted by other regiments, and the equable distribution of work and saving of Farriers assured

* On one occasion it took 74 telegrams to obtain the services of a Farrier for a Mounted Infantry Regiment, and there were scores of cases where no record of correspondence is available.

† There were in addition, at this time, 35 Army Farriers and 60 Indian Farriers with this Department.

‡ On the 31st May, 1902, there were, besides the civilians mentioned above, 60 Army Farriers and Shoeing-smiths, and 104 Indian Shoeing-smiths.

‖ At one Remount Depot the Commanding Officer paid the civil Farriers by piece-work as being economical. It resulted in these men netting £42 a month a head!

A partial remedy for this state of affairs was provided by the War Office sending out "specially enlisted" Farriers from home. These men wore Artillery uniform and were at first claimed by this arm; after great delay they were distributed. They soon found out that the civilian of the country was receiving 10/- or 12/- a day, and so started by being discontented. Their pay was 2/9 a day with a bounty, and they were engaged for a year. At the end of January, 1901, there were 45 of these men at Cape Town, time expired, awaiting passage home, and not one could be employed even on temporary duty. The fault lay with the terms of their contract, which should have been "for the campaign," and not "for a year."

The shoeing of the horses in South Africa finally resolved itself into shoeing by the Remount Department. Every animal, during the last eighteen months of the war, was shod all round by Remounts before issue, and this shoeing largely covered the period of the animal's utility until returned to Remounts for rest and repair. Towards the end of the war the Remount Department shod at the rate of 35,000 animals per month. *

From what has been stated it is clear that the Farriery system of the army broke down immediately it was tested under active service conditions, and every officer of sufficient experience in the Veterinary Service knew this to be inevitable. Comments on Farriery organisation have appeared in nearly every veterinary report on a campaign, but no notice was taken of them, nor indeed, in spite of the collapse in South Africa, have any steps been taken to remedy the state of affairs above described.† A Farriery organisation on a regimental basis is bound to fail unless a very large reserve is obtainable on the outbreak of hostilities.

The material for shoeing was generally ample in quantity though not in quality. It is true there were innumerable complaints of a shortage or absence of shoes when columns came into the line to refit, but this was generally due to the delay in transit or the uncertainty in the movements of columns. The stores including shoes went to one place, the column to another. The complaints of ill-assorted sizes were more reasonable. Large horse shoes were sent for small horses, and even the largest size of draught hind shoes found its way into Ordnance Depots, having previously occupied valuable space in vessels and railway trucks, to be left finally on the hands of the Ordnance Department.

No one wanted anything but small shoes. Even the small size of English shoes was unnecessarily heavy, so shoes came from India. Before the war broke out the Ordnance Authorities at Cape Town had been advised by the Veterinary Service that the shoe which was most suitable for the country was that known as the Egyptian pattern. This was a shoe evolved by the Veterinary Authorities in Egypt as the result of experience; it was light but gave good cover, and so made as to assist a tired horse, or one with defective action. These were not stocked as suggested, nor were any obtainable until long after the war started. The shoes generally supplied were machine made, but the stock had run so low that the Government bought shoes anywhere and everywhere, many of these were hand made and disgraceful. In addition, they were all without clips, and clips cannot be drawn on service, as no fires are carried.

This is what the Director-General of Ordnance at the War Office said to the Commander-in-Chief on the matter of the Reserve of Horse Shoes, a few weeks after the war broke out:

"Our reserve of general shoes was utterly inadequate to meet the demand. We have had to buy in the market whatever we could get. As an example, we had an authorised reserve of 52,000 sets of horse shoes, and no mule shoes. I have to send 35,000 sets of horse shoes and 40,000 sets of mule shoes to Africa monthly to keep the animals shod. I have to go to Germany and Sweden for horse shoes, and to the United States for mule shoes."—"R.C. Report, App: E," p. 279.

We learn in this statement the astounding fact that no reserve of mule shoes was maintained, though every successive Government for years past had known that on mobilisation for service abroad mule transport would be employed. It would be interesting to know what became of the 40,000 sets of mule shoes sent monthly to South Africa. They were certainly not put on the feet, for the animals worked without shoes, as there was no one to shoe them. The wonder becomes all the greater when we learn from the R.C. Evid., *Q.* 1603, that the issue of horse shoes later on grew to 100,000 sets and of mule shoes to 70,000 sets *monthly*. °

A large proportion of the nails were bad. Their shape invited them to break at the neck, and that the material also was bad was shown by the fact that frequently all the nails would break and the shoes drop off. No doubt the stock of nails, as well as of shoes, was insufficient to meet demands, and nails of all patterns and makes were purchased. It was amongst these that the failures occurred, for the regulation nail was a good one.

The condition of feet which had been carrying shoes for weeks without being removed is easy to imagine. The labour involved in their reduction to normal length was considerable, and rasps were not plentiful. An ingenious horn cutting pincers was introduced by Major Blenkinsop, which rapidly removed the over growth, and left a surface readily

* These figures are important. The total shoeing staff amounted to 339 men, and without making allowance for any of these being sick, the average number of horses shod per month amounted to 103 per head.

Our estimate on p. 242, of three men per squadron in the Field for the shoeing of 160 horses a month, is therefore, liberal, though not in excess of requirements, as many animals will require shoeing oftener than once a month.

† The Royal Commission did not enquire into the breakdown of the Farrier organization, though in *Q.* 1783 the matter is referred to. This could never have occurred had the "horse" interest been represented on the Commission.

° The whole track of the Army was mapped out by dead horses, cast shoes, wasted oats, and rifle ammunition.

levelled by the rasp. Though a labour-saving machine it was something new, and was disliked by the very men who should have welcomed its appearance. It is to be hoped that it will take the important place it deserves in our next campaign, for the supply of new rasps can never be sufficient, and the saving of time in shoeing is an all-important matter.

The injuries resulting from shoeing and neglect in shoeing may be briefly dealt with.

The condition of the feet of animals arriving at hospital was almost beyond belief. They were overgrown, deformed, held the broken shanks of nails and portions of shoes, and contained in any cleft or space stones and mud, baked to a clay by the heat of the foot and the ground. This concrete-like mass required considerable effort to dislodge. If a portion of shoe was found on the foot it was embedded into the seat of corn. Suppurative diseases of the feet were in consequence appallingly common; soles were under-run, and fistulæ of the coronet became a large and serious class of surgical cases, the number of which is beyond belief.

Never again, let us hope, will an army have so large a number of quittors to deal with. Not only did they arise from neglect in shoeing and untended injuries caused by nails, but also from damage to the coronets inflicted when horses are in mobs, or crowded together. We can hardly think that any surgical trouble in our hospitals gave such bad results in treatment as the quittor cases, due to the exceptional difficulties these always present, and the impossibility, with untrained assistants, of daily dressing large numbers. The introduction of "stocks" into hospitals was helpful in this and similar surgical cases, but it can never be said that our quittor work was satisfactory.

Something perhaps should be said of cold shoeing in the Field, for the reason that its advantages are not even now fully accepted. It is a makeshift system, but absolutely essential in war. It offers no serious difficulties with the lighter class of shoe, but is impossible with the heavy shoes. A large mass of iron cannot be dealt with without fire and anvil, and rightly neither exist. Hot shoeing in the Field is an absurdity; where is the needful fuel to be carried, or even obtained; further, the forge is always the first thing dropped by the way when horses run short; this is invariable.

The principle underlying cold shoeing is that the size of shoe nearest that of the foot must be selected. Small alterations of increase or decrease of width are possible with light shoes, and it even ought not to be beyond the range of mechanical skill to devise a machine for making alterations in width of the heavier class of shoe, but more than that must not be expected. So long as the rim of iron enables a horse to take his place in the ranks we must be content with rough fitting. In spite of the fact that one-and-a-half millions of horse-shoes were sent to South Africa during the war, it cannot be said that "cold shoeing" was either properly tested or proved successful, for the reason that the Farriery system on which it depended broke down, and the feet had to take care of themselves. The loss which resulted from this neglect is incalculable.

The carriage of horse-shoes in the Field is divided between the horse and the transport waggons. As every ounce of unnecessary weight will, in future, have to be removed from the horse's back, it is clear that the shoe case with fore and hind shoe at present hung on the saddle will have to disappear. A few shoes carried by the various "cold shoers" are sufficient to meet urgent demands in the Field, all others will have to be carried on wheels, and accompany the transport.

To provide an efficient Farriery service, the first essential is that the regimental basis must be abolished and a Corps of Farriers created; the shoeing must be Army and not regimental. The men must primarily be tradesmen and not fighting soldiers; they must be taken care of by moving with the transport, for without doubt they are the most valuable artificers who take the Field.

A Corps of Farriers would enable a General to send tradesmen wherever they are required; it would provide for the troops in the Field, for emergency corps, Remount depots and veterinary hospitals. It should be a single organisation, under central control so far as the distribution of the men is concerned, though, for discipline, under the officer commanding the unit to which the men are attached. The whole time of the Farriery Service during peace or war must be devoted to the care and attention of the horses' feet. No parades, drills, or military operations after the indispensable primary training has been completed. Emergency shoeing in the fighting line must be carried out by the regimental cold shoers, trained as at present, and in receipt of a special rate of pay to encourage men to qualify. The part hitherto played by Farriers of Regiments as veterinary assistants to be taken over by the personnel of the Army Veterinary Corps.

The Royal Commission on the War mentioned the Farriery question. In *Q.* 1783 the following was asked the Director-General of Ordnance: "You may have seen the accusation that there were practically no farriers in South Africa. Which department would deal with that?—*A.* The supply of farriers would be in the Adjutant-General's department."

Unfortunately, the matter subsequently appears to have been lost sight of, for no evidence was given on the point.

SORE BACKS.

Sore backs appear inseparable from mounted service, they have existed as long as the horse has been used in war. It was reasonable, however, to suppose that, as knowledge advanced, a reduction in this class of injury should have been possible, and that during the centuries a standing army has existed, sufficient experience would have been gained to enable us to pronounce definitely on any given type of saddle as good, and adopt it, or any type as bad, and avoid it.

If we wish to gain a true insight into the sore back question we must go back to the forty years of peace succeeding Waterloo, during which period all the lessons of war appear to have been forgotten. At the end of this time it had become established as a cardinal principle that sore backs arose from the careless manner in which the man saddled or rode his horse, and the rider was accordingly punished. The necessary corollary of such injustice was the concealment of injury. The Cavalry in the Crimean Campaign suffered severely from this class of wound, but the wholesale destruction of the mounted forces by starvation withdrew attention from the sore-back trials, and after the war—as after all wars with us—the inconvenient question was never taken up, and in a few short years the matter was apparently forgotten.

The Zulu War and, immediately after, the Campaign in Egypt, once more brought the matter to the front; for no sooner were mounted troops compelled to act under service conditions than the old bane of Cavalry reappeared. It is fortunate that at this time—the early eighties—the Cavalry had as their Inspector both a soldier and a Veterinary Surgeon. The late General Sir F. FitzWygram established a crusade against the then pattern of saddle, studied the question of sore backs, showed that the saddle was more often to blame than the man, and was instrumental in introducing saddles with iron instead of wooden arches into the service. Above all, he provoked an interest in a subject about which, strange to say, extraordinary ignorance existed. His official position insured that the question received attention, and he broke the first ground in this all-important matter. Reforms cannot be produced in a day, and it is doubtful whether among the older Officers of Cavalry at the time any enthusiasism in the subject existed.

It was evident that the saddle could not be studied apart from the horse, and there was still a great deal connected with the latter which required elucidation. Both the theory and practice of saddle fitting was necessary, and this could only be correctly arrived at by a knowledge of anatomy and physiology. The Veterinary service took the matter in hand, and one of its number, after some years of work, produced a *Manual of Saddles and Sore Backs*, in which, for the first time, the grammar of the entire question was laid down. This Manual aimed at giving exactitude to what was previously conjecture and guess work; it swept away some of the then existing fetishes, and reduced the question of saddle fitting to science and common sense. It promised no more than it was capable of demonstrating could be achieved, and the success which attended the application of its principles and practice secured the attention of all interested in the welfare of the horses. But enthusiasts in the question were not numerous. The whole matter appeared, like a revealed trick, so absurdly simple, that few doubted their ability to put it into practice when the time arrived. The sermon was over and over again preached that each case of sore back was a problem in itself, and that nothing but long practice could secure the skill necessary in dealing with the many sources of injury to which this part is exposed. Nevertheless, good seed was sown, for the general trend of events was in the right direction; the Cavalry had been taught the make and shape of a horse's back, the physiological conditions under which the back carried weight placed on an unyielding machine, and the causes of injury, with a definiteness and exactitude unknown to the previous generation. Ten years later, which takes us up to the middle of the nineties, it is fair to assume the majority of Cavalry Officers knew something of this all-important matter, though the opportunities for practice were confined almost entirely to the manœuvre season.

Side by side with these changes there was an ever-increasing desire for alteration in equipment; the type of metal arch underwent many changes, some unimportant, some necessary in consequence of proved defects. Other changes were radical and opposed to experience. One of the worst was introduced shortly before war broke out; the burden of this story is to show that it was responsible for a very great deal of the trouble which subsequently occurred.

It must always be borne in mind that no test of equipment in peace is ever carried out under conditions approaching those of active service, so that the root of the matter is rarely arrived at.* Nor are the tests imposed such as might be expected when important changes in equipment are under consideration. Take the case of a change in the type of saddle. The test usually employed is to issue half a dozen or so to a few selected regiments and order a report to be furnished by a given date, probably far too short a period for any real test to be employed. The saddles arrive, and those responsible for carrying out the observations are, perhaps, not even taken into the confidence of the authorities as to the objects aimed at. The usual conflicting reports go in from the various regiments, some destructive, some constructive, and a man sitting in an office miles away has finally to decide the matter on the data before him. Is it any wonder

* A good example of this was the canvas bandolier for carrying ammunition in the Cavalry, and the pouches in the Infantry, which in each case allowed the ammuuition to fall out as the man lay on the ground, and so kept the enemy well supplied.

under these circumstances that blunders arise? * No question of horse equipment should be decided without an experiment on a large scale, carried out under conditions as nearly approaching those of active service as is possible. Confining ourselves entirely to horse equipment, no saddle, no shoe, nosebag or picketing gear should be adopted that has not been used on a whole regiment which has marched with service weight at least 400, and preferably, 600 miles. Day by day the test should become more rigid and exacting, and in the case of saddles, the animals should even, at one period, be placed on reduced rations, in order that the effect of loss of condition may be studied. In no other way than the above is it possible to get at the root of matters; anything based on what may be termed barrack square tests is worthless. A type of saddle or shoe which comes successfully through such a test as we have suggested is not likely to have much wrong with it. All the weak points having been revealed, the matter is then in a condition for vigorous handling. Of course, the objection against a proper practical test centres around cost, but is it cheaper to order imperfectly tested equipment, than pay the necessary price for rigid inquiry? The curious will be interested to study the patterns and changes in saddlery which have taken place within the last thirty years; such may be culled from the "List of Changes in War Material," and other official sources.

We are now in a better position to understand the condition of the saddle question before the war. In about twenty years we had passed from wooden arch saddles with hair panels, to saddles with a metal arch and hair panels. The vicissitudes of the metal arch saddle we have previously hinted at. A "Saddlery Committee" sat for years, and evolved type after type. Of wrong pattern and material to start with, these arches proved prolific sources of injury; modified and strengthened as years rolled by, a type was in course of years arrived at capable of withstanding the enormous strain imposed on a soldier's saddle. The parallel bars on which these arches rest were then attacked, but not until after years of representation from the Veterinary Service that their great length impeded the horse's movements by pressing on the blade bones. In the course of these alterations the old hair panel was taken away and strips of felt employed together with a small blanket placed under the saddle, to take the place of the hair panels. There were other alterations projected, such as a self-adjusting side-bar, but this matter we need not here enter into, as it never crystallised. *The war caught us after all hair panels for army saddles had been withdrawn, and nothing but a thin felt panel and indifferent blanket substituted.*

Before proceeding further we must look at the hair panel. It was an elastic bag secured to the parallel side bars, and was capable of taking the impression of a horse's back almost as completely as if made in wax. The hair shifted sufficiently in the panel to adjust the distribution of weight, while its elastic motion between the saddle and the back was an obvious advantage. It had its drawbacks; in course of time it became lumpy from the penetration of sweat, it became compressed and thin, and the white flannel cover necessitated pipe-clay in order to improve its appearance. Every application of wet pipe-clay helped to render the hair within lumpy, and the beating together of the panels to remove the surplus material destroyed the exact impression of the horse's shape which the panel had received, and moreover, bundled the hair into definite parts of the panel, instead of leaving it equably distributed. But the panel possessed advantages of the most pronounced character; extra material could be introduced into it in a few minutes, so that the condition a horse was losing in the muscles of the back could be artificially replaced in the panel, which thus ensured the saddle being kept at its proper height above the vertebræ; further, the panel could be "chambered" over a sore or weak point, and the pressure removed. These were advantages of enormous importance, and those responsible for stripping the saddles of their hair panels and replacing them by a piece of felt—which became as hard as a board through sweat—and a thin folded blanket, could never have appreciated their advantages or gauged the horse's requirements. A saddle tree with only a blanket and felt cloth (numnah) beneath it requires far more careful adjustment than one with hair panels. It is quite true that the blanket possesses some advantages denied the hair panel, but *what was required on a campaign were both hair panels and a blanket*, the function of the latter being to replace back waste by different methods of folding.

It must not be thought that the question can be disposed of in the simple manner the last statement appears to indicate. It is not only a large subject, but confused by infinite detail, due to the

* Following the custom adopted in this history of quoting authorities or giving examples, we will take one or two connected with the question under notice.

When the iron arch saddles were introduced after preliminary trial and favourably reported upon, it was found, after the whole army had been equipped with them, that the front arch was so weak, that the saddle came down on the withers. As a matter of fact the arch could be opened or closed by hand! A strengthening plate was put in. This was applied to the thousands of saddles in use, and was found ineffective. Steel arches were then tried, and finally a steel angle iron arch was adopted. We submit that the weakness of a flat iron arch could have been discovered in the preliminary experiments had these been of a searching character.

Several years later, to take another example, for some reason no one understood, the seat of the saddle was split in the centre from end to end. It is assumed that the split was well reported upon. When generally adopted it was found that the saddle blanket worked up through it and galled the man, the result being that all the seats had to be closed. It seems very obvious that this fault should have been capable of being found out before saddle seats were ruined by splitting, and heavy expense incurred in restoring them.

Other examples might be quoted, but the above suffice to support the argument we have advanced for searching and extensive tests of new equipment before adoption.

fact that no two horse's backs are exactly alike. All that has here been attempted is to give a brief history of the matter, and so enable us to understand the condition of affairs when the Campaign opened.

The whole of our mounted troops took the Field with a type of saddle quite fit for peace conditions, but absolutely unsuitable for war. It did not require any very great sagacity to forecast what must occur to horses' backs under the circumstances.

This prepares us for the statement that sore backs represented one of the chief causes of inefficiency among the horses in South Africa, only exceeded by debility and mange. They were the first troubles to arise, and lasted throughout the whole campaign. Let us at once say that sore backs are caused, not only by defects in the type of saddle, but defects in fitting and workmanship, defects in horse-management, underfeeding, bad horsemanship, crushing weights, long hours of work, and softness of condition. It is obvious that all these causes may overlap.

It is astonishing to learn from the Director-General of Ordnance, R.C.Report, Appendix E, p. 278, that at the opening of the Campaign in South Africa, there were only 500 saddles in reserve, to meet the wear and tear of the 16,000 sets in possession of the troops on 15th Dec., 1899. On the same day there were 500 saddles in reserve for Mounted Infantry, and already a demand from South Africa had arrived for 11,500 sets.* The trade could not supply, and the order went to America. We are not concerned with the question of stock in hand, dreadful revelation as it is, but it is evident that material like saddlery ordered in a panic is liable not only to fail from hasty workmanship, but must necessarily lead to the introduction of new patterns, when, as in this case, the entire stock of foreign manufacturers is bought up regardless of type or suitability.

There were many types of saddle in use during the war, derived from outside sources, which all differed in essential points from that employed by the Regular Forces. The United States, India, South Africa and Australia, all furnished saddles which generally possessed one point in common, inasmuch as they were lighter than the home patterns, and, excepting those of the United States, possessed stuffed panels.

The first great division of types of saddle employed is into panel and non-panel. The non-panel type is represented by the War Office pattern, and those made to this pattern, whether at home or abroad, after war broke out. Another non-panel saddle was the United States Cavalry pattern, the issue of which at Pretoria is referred to on p. 82.

The second group is that of saddles with panels, and is typified by the Colonial semi-military pattern employed by the Staff and Officers of M. Infantry, and the Colonial pattern pure and simple, with nothing military about it. In the non-panel type, the bare tree is placed upon a folded blanket beneath which is a numnah (a cloth of felt). In the panel type, the tree is covered by a panel stuffed with horse hair and flock, and resting either directly on the back, or on a numnah or blanket. In the Colonial semi-military pattern the panels are readily get-at-able, so that their removal from the tree is a matter of a few moments; in some others of the Colonial type the same facility exists, but there were Colonial saddles where access to the panels was as difficult as it is in the ordinary hunting saddle of civil life. The Colonial saddle, whether semi-military or not, may be described as, in principle, a roomy hunting saddle possessing D's and other appliances for carrying equipment. The chief failure of Colonial saddles was not so much in shape and type as in quality of material; some of them hurriedly put together for the war possessed wearing qualities little better than brown paper, and this was particularly the case with those manufactured in South Africa. The saddle D's were frequently merely tacked on, instead of being rivetted to the tree or sewn on to stout canvas. Many of the saddles at first used by irregular corps were those specially made for "trading" with natives; they were cheap and worthless. They gave a great deal of trouble from breakage and caused many injuries

It is obvious that the substance of which a saddle is made should depend upon the living weight to be placed on it, and the dead weight which is secured to it. Colonial saddles are not constructed to carry much dead weight; a blanket, some food and simple means for cooking it, represents all the impedimenta carried. The tree of such a saddle and the substance of the material covering it may be correspondingly light. Its prototype in this country would be a good roomy hunting saddle with some extra D's.

If a saddle, in addition to carrying a man, has to carry all his worldly possessions it must be made stronger in the tree and stouter in its material, and the increase in strength means increase in weight. Consequently it is no use talking about reducing the weight of the Regulation saddle until the question of what constitutes a fair load for a soldier's horse is settled. If it is to be twenty stone, as at present, nothing lighter than the existing material will carry the mixture of dead and living weight.

As a matter of fact, we know that the infliction of such a weight is an outrage on any other than a trained pack horse, and that experience tells us the maximum weight a horse can carry effectively lies between fourteen and fifteen stone. We must never forget that the construction of the horse is adapted for pulling a weight, and not for carrying one; he can effectively haul two-and-a-half times his body

* In this communication we are also told that there had been 500 single sets of horse harness in store, but that already 800 sets had been sent to Africa to replace casualties. There were only 1700 mule sets of single harness maintained, though 33,000 mules were known to be required for transport purposes on mobilization. The reserve of picketing pegs, ropes and mallets, was not sufficient to supply, even at this early date, one-fiftieth of the demands from South Africa.

weight, and for short hours and short distances very much more than this, but he cannot effectively carry more than the one-sixth to the one-fifth of his body weight.

If, from the horse's point of view, we were called upon for an expression of opinion as to the class of saddle a soldier should ride on, we would say a strong, roomy, well-stuffed hunting saddle, resting on a blanket, the panels of which can be readily got at. Nothing more should be carried on this saddle than the man's cloak, and food for horse and rider for the day, for which purpose strong attachments, or D's, should be provided. The saddle must be roomy—nothing is so tiring to a man as a short seat, it causes him to be constantly shifting his position, tires his horse, and by twisting the saddle produces injury.

The general verdict on the Regulation saddle was that it was clumsy, heavy and too short in the seat. The causes leading to its sore-back-producing features we have previously glanced at. The Colonial (Staff pattern) saddle was excellent. The ordinary Colonial pattern was satisfactory provided it was made of good material, but the liability to breakage from bad material, defective workmanship and heavy loads was very noticeable. Defective material does not affect the question of type, and the type was good, practically the same as that used by the enemy. The Dutch of South Africa live in the saddle; we may be quite sure that no pattern is adopted by them which is unsuitable for the purpose. During the war every Burgher effected his own saddle repairs. Their profound knowledge of horse management, and the fact that though they never walk a yard they equally never sit for a second on their animals the moment they halt, preserved the backs to a remarkable degree. I have the authority of Sir Arnold Thieler, K.C.M.G., who served as veterinary officer with the Republican Forces, for saying that there were few sore backs among the real Burgher class, but their foreign allies provided them with a large number.

The saddle and equipment carried by the enemy during the war may be seen in Plate ii. It should be compared with that of our men shown in "A Mid-day Halt," Plate i, Fig, 4.

The waste of material in war is always great, sometimes unavoidable, but there are causes of waste capable of control. A "set of saddlery" comprises very much more than a bridle, saddle, stirrups and girths. Wallets, breastplate, numnah, shoe cases, rifle-bucket and innumerable straps go to make up an alarming total.

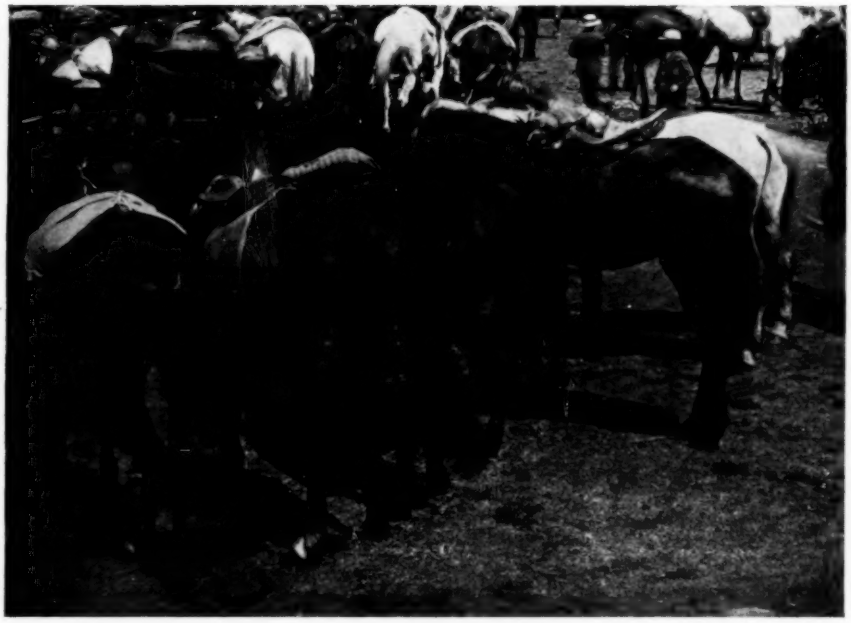
The system of military accounting demands that a complete set of saddlery shall be issued. Yeomanry and Irregular regiments were invariably anxious to leave the impedimenta behind, as they prevented the men from mounting and dismounting, and only to take the essentials; but an Ordnance issue is "all or nothing," with the result that the unnecessary material was deliberately thrown away, unless the Commanding Officer could secure some place to store it. What the loss amounted to under this head alone it is impossible to say. Tens of thousands of pounds worth of parts of saddlery and equipment were deliberately thrown away as not being essential, or, as in the case of hay nets, not being required, as there was no hay to carry.

Not many weeks after the Director-General of Ordnance wrote his minute of 15th December, showing that the reserves of Cavalry and Mounted Infantry saddles only amounted to a thousand, a pile of saddles, one of many, might have been seen being burned in the Field to prevent them falling into the hands of the enemy. These belonged to horses which had died or had dropped out, and for the carriage of which no transport existed. When these horses were replaced a complete new saddle was also required. No wonder wars are expensive! The enemy, under similar circumstances, would have buried the saddles, but then he had been differently brought up, and, moreover, he would have been taking care of his own property. In the other case, it belonged to that long-suffering individual the Tax-payer.

The next point to be considered, in general terms only, is defects in fitting, and we here come to a very complex case. The shape and bulk of a horse's back depend upon his condition; with every variation in this there is a corresponding variation in the shape and size of the back, and, strictly speaking, it can never be said in war that a saddle fits; it may fit to-day and not to-morrow. The tendency on service is for the saddle to become large, for the reason that the horse's back is becoming smaller. This is the explanation why the most constant supervision is required; on a campaign there is no finality in saddle fitting. The saddle rests on the muscles and not on the bones: the muscles are growing progressively smaller but the bones do not waste, they seem, in fact, to grow larger as muscle-waste takes place. The liability to injury is increased day by day, as a consequence of the saddle, man and equipment coming nearer to the bony framework. Not only do the muscles become smaller, but this is followed by an alteration in their shape, so that the weight is no longer supported in the same way.

With every alteration in the muscles of the back there must be some addition to the material beneath the saddle if the latter is to maintain its proper position above the spine. In what way is the loss of back-muscle in war to be replaced? This is one of the problems in saddle fitting which the sanguine at one time believed was solved. It can only be effected by the addition of a saddle blanket to the hair panels. But if the account which has been given above is clear, it will be seen that when war broke out the Cavalry had no hair panels to their saddles, they had been taken away, and with their abolition the flood-gates of disastrous back-trouble were opened.

Whether the horse be for military or civil riding the saddle must always be at a definite height



GROUP OF HORSES IN A BOER COMMANDO.

Note the trifling amount of impedimenta carried on the saddle.

The class of animal used by the enemy is also well shown. The weight they carry may be judged from the tall broad-shouldered man holding them, who is typical of his race.

Plate II.

above the spinous processes of the dorsal vertebræ, but, whereas for civil purposes the clear space may be small, for military purposes it must be much greater, owing to the heavier weight placed in the saddle, and the daily shrinkage of flesh. The saddle is kept above the vertebræ by the means we have just mentioned, *i.e.*, extra stuffing in the panels. Where there are no panels the extra material can only be given by placing a second blanket beneath the saddle. Two blankets and a numnah now lie across the ridge of the back and fill up the air channel which should naturally exist at this part, they also fill up the front arch. By filling in this space pressure is brought to bear on the spine and withers, so that the very measures employed to replace loss of flesh on the back may be the means of injuring the spine. On the contrary, if no second blanket be used, the loss of muscle will subsequently prove so considerable that the saddle will, as a consequence, actually rest on the spine and withers. A few *minutes* of this will give the horse a sore back, which may take weeks to cure.

The presence of hair panels largely abolishes the terrible conditions above outlined; for extra stuffing can be placed in a panel in a few minutes,* or a saddle blanket employed. The channel of the saddle will accommodate *one* blanket plus numnah, but not two blankets, while the panels, practically, do not interfere with the channel.†

The defects in fitting which occur through saddling up in the dark can only be fully realized by those who understand how essential daylight is to such an operation. Even the most careful man may, when day breaks, find the loose end of a strap between his horse's withers and the saddle, or a buckle resting on the spine. In both of these cases injury will surely result to this remarkably sensitive part.

Defective fitting comprises many faults, not only those mentioned above, but many others into which we cannot here attempt to enter.

Defects in the horse are those associated with make and shape. High, lean, razor-like withers are sure to become injured on service; an animal with indifferent muscular development of back-muscles gives nothing for the saddle to rest on; a narrow back instead of a full wide one carries the load too low on the ribs. A round back is liable to be injured over its greatest convexity; a hollow back is injured at the two points front and rear where the saddle rests. Conformation plays, therefore, an important part, more especially among horses bought in a hurry for use in war.

Defects in management are so many that we can only indicate some of the principal. If men are allowed to sit on their horses all day nothing can prevent sore backs. It was a cardinal principle in the Cavalry in years gone by never to be seen off one's horse; it was considered undignified. Prejudice and ignorance die hard, and as the alternative to being on the horse's back is walking alongside him, the human element comes into operation, for who would walk when he could ride? Over and over again during the campaign attention was drawn to the importance of Cavalry dismounting at every opportunity. It serves, of course, two great purposes, it relieves the back from weight and so gives the muscles an opportunity of rest, and it admits of the blood circulating through the skin of the back after being pressed out of it under the influence of a weight of 20 stone. If horses are led in hand when military conditions render it possible, and a practice established of dismounting every hour, if only for a few moments, and, if circumstances admit, loosening the girths, exhaustion is not so likely to occur and backs are saved. One has only to read the evidence before the R.C. of a Cavalry soldier like Rimington to realize what is possible in the hands of a horse-master in the matter of saving wear and tear. (See p. 237).

The other defects in management might be embodied generally under defects in horse-mastership, for everyone ought to realize the prime necessity for hard condition before severe work is attempted,* the readiness with which "soft" horses gall, and the paramount necessity of watering and feeding whenever possible. The distance between these and back trouble is not great. Even the roller of the blanket used at night may be a fruitful source of trouble if drawn tightly—as men invariably do—to keep the blanket from coming off. The wise Squadron Commander knows how the web shrinks in the rain or heavy dew, and has them eased accordingly. The master's eye must be everywhere, he must have knowledge, judgment and imagination.† The growth of the latter is inhibited by a

* Under stress the extra stuffing need not be hair or wool; hay, grass, straw, even leaves or paper, may be substituted. In South Africa wool was available almost everywhere. General Rimington says, with a good deal of trouble he could make the Colonial saddle suit almost any horse by adjusting the stuffing and putting in wool or hay ("R.C.," *Q.* 12,735, *et seq.*). Colonel Thorneycroft who used nothing but panelled saddles, says that restuffing caused no difficulties to the one saddler he had per Company ("R.C. App. 52").

† The use of the saddle blanket beneath the panelled saddle is invaluable when Colonial ponies lose condition in the Field, but its efficiency depends entirely on the supervision of the officer. [Thorneycroft *loc. cit.*]

* For this defect in horsemastership during the war the Regimental Officer was not responsible.

† A very good example of defect in this respect is given in the "Imperial Yeomanry Report" of 15th May, 1901, and "Supplement" of 1st January, 1903, "Parliamentary Papers," Cd. 803.

Some 300 pack saddles had been provided for the use of this Force. Complaints were sent home that the saddles were too small, and samples were ordered to be returned for inquiry. On their arrival it was found that the complaints arose from a complete misunderstanding as to the packing of the saddles; straw and horse hair stuffing employed to prevent the trees breaking in transit had not been removed!

The writer remembers a saddle, with a mechanical tree, being issued for experiment many years ago; a report was made on this saddle without the peculiarity in its construction being known. The panels had never been removed, and the mechanical contrivance for self-fitting lay within them unknown to the regiment conducting the trial.

cast-iron peace system, and paralizing regulations; fortunately these can be thrown to the winds in war, and scope given to originality.

Bad horsemanship as a cause of sore back was very evident during the campaign. How could it be otherwise with men sent into the Field who had never previously ridden?

Rolling and twisting in the saddle are common causes of sore back besides being most exhausting to horses. Much of it is caused by the seat of the saddle being too short. The moment the men sit askew to take the weight off the ischii they should be dismounted. Bad horsemanship runs hand-in-hand with bad saddling; what could a man know of saddling who had never previously put one on a horse's back? We need not labour the point, it is almost unbelievable that such things could have happened.

The weight carried is the crux of the saddle question. If 20 stone has to be carried, the saddle requires to be much stronger than if only 15 stone is being carried. Those five stone make all the difference between whether a roomy hunting saddle can be used, or one suitable to carry a "man-at-arms."

No horse should be asked to carry more than 15 stone in weight all told; the service weight is 20 stone. At present the horse has to carry the rider, his arms, ammunition, accoutrements, picketing gear, food for horse and man, necessaries and comforts, the whole placed upon, or strapped upon a contrivance which has to be of immense strength to stand the strain. *It is almost incredible that the animal is inflicted with the equivalent in weight of two men.* There seems no escape from a crushing weight so long as it is considered necessary to send men into the Field with anything more than their arms and ammunition—more than that, with the man's cloak and food, and the horse's corn, ought never to be placed on the back. General Rimington, during the war, got the weight of his Scouts down to 14 or 14½ stone all told. Too much credit cannot be given to this officer for the manner in which, immediately the war began, he grappled with the question of the weight carried. He was a Cavalry soldier, yet it is doubtful whether his influence in this matter was felt, even though Lord Roberts spread his views broadcast by the publication of an order. The fact is that material has to be carried at the expense of the horse for which light transport should be provided. It cannot be that it is considered cheaper to weigh down the Cavalry rather than provide them with transport; it can only be due to the fact that the limitations of horse power are not understood. Our Cavalry can never be effective until the weight is reduced to 14 stone, 15 stone being regarded as a maximum.

Haig, in his evidence before the Royal Commission, *Q.*19,449, *et seq.*, regarded 14 stone as the weight to be aimed at. He found with the ordinary regulation saddle, when it was stripped of everything and the man allowed nothing more than what he stood up in, together with cloak, waterproof sheet, soap and towel, arms and ammunition, one day's food for horse and man, that the weight could not be got below 17 stone 6⅜ lb. The man, stripped, weighed 10 stone 12 lb., which is too heavy. Reservists were, of course, much heavier than this, a fact which must ever preclude the Cavalry Reserve from being a reliable source of strength.

Rimington, R.C. *Q.*12,656, *et. seq.*, got his irregular regiment down to 14 to 14½ stone. To secure this, the men rode as they stood, together with cloak, food for horse and man. He cast away wallets, change of clothing, grooming kit, shoe cases, spare shoes, hay net, spare boots, picketing gear, breast plate, hoof picker. The spare material was carried in wagons. (See R.C., Vol. i., p.531, App, H, and Vol. ii., p.28).

Thorneycroft's men rode heavier, as they carried wallets weighing, when filled, 9½ lb. In the R.C. Appendix No.52, p.351, he gives details of his equipment. The lightest of his men appears to have ridden 16½ stone, but, even then, much lighter than the Cavalry.

General French, in his evidence, R.C., *Q.*17,194, *et seq.*, said that the Cavalry soldier should have nothing on him but arms and ammunition. Discomfort would ensue, but this must be risked, even to going without food, for, as he adds, "It is absolutely impossible, if Cavalry are to do their work, that they can be laden as they were in the last campaign."

There is no part of a mounted soldier's equipment which offers greater temptation to the rider to carry weight than the wallets; anything and everything finds its way there, the most tempting souvenir being an unexploded shell. Wise Commanders soon cast wallets to the winds.

We do not intend to pursue this question of weight further. No one with knowledge defends it. If Cavalry are going to ride 14 stone in future vast changes will have to be made in the organization of this arm, including the provision of transport, for that which is at present carried on the horse.

It can be seen, in spite of the rapid survey we have made of the question of sore backs, that the sources of injury are many, and that though a dozen horses may be suffering from sore backs, not two of them may be due to the same cause. We cannot here attempt to specify the number of distinct injuries which occur, but each has its own definite position on the back, and each tells its own story. The position, then, of an injury is not a matter of accident, and this being so, the position of the injury, to the trained eye, reveals the cause of the trouble. Once this lesson is learned the next step is arrived at. If the cause is known it can be removed, and if it be removed further injury ceases. Thus the story is built up step by step, with an exactitude which depends upon the powers of observation of the squadron authorities. Simple as this may seem, it is the basis of effective legislation, and effective prevention and cure. In days gone by a sore back was a sore back, no matter where it

occurred; it might be under the seat of the rider, or in front of his thigh, or on the top of the spine behind, or on the play of the shoulder. We now know differently, and that each position of an injury on the back is distinctive of some special cause. We have, in fact, an accuracy given to back inspection and saddle-fitting which, in skilled hands, reduces it to almost mathematical precision.

This, however, can only be attained in one way, and that is by daily inspection. The officer on service who neglects to inspect the back of every horse daily fails in one of his first duties to the State. The example he sets in this matter is the one which is followed by all under him. There is no more uncommon thing in war than fighting; the days in a campaign are made up of a lot of marching and very little fighting. Peace manœuvres, in this respect, are most misleading. The back inspection, spoken of above as a daily routine, can be carried out if time and opportunity be taken, and it is seldom that these are absent for even a day. The value of such an inspection is of the same utility as the "stitch in time"; the rub of to-day becomes the sore of to morrow.

It is rather a matter for surprise that so few officers are skilled in the subject of saddle-fitting and the prevention of injury. They are all glad for their horses to escape without sore backs, but few show any real natural aptitude for this study. The tendency to work horses with sore backs rather than report them sick (see p. 59) is only justifiable when the squadron officer is capable of effecting such alteration as will enable the horse to work without further injury occurring. It is probably the theoretical simplicity of saddle-fitting which causes its practice to fall far below the requisite standard.

The relative proportion of the various injuries on the back which occurred during the war cannot be stated with even approximate accuracy, as records are not available, but it is safe to say that the withers and spine were three, perhaps four, times more frequently affected than any other region. This fact alone tells its own tale of defective equipment and want of supervision. A good object lesson is conveyed in Plate i., Fig. 4, which shows the halt of a column at mid-day. The amount of impedimenta carried on the saddle may there be seen, even when much has been lost through wear and tear in the campaign. The top weight oscillates, while the want of adjustment of balance causes the saddle to heel over and press against the withers. So important is the adjustment of weight that it is better to carry weight for the purpose of adjustment, than ride with one side of the saddle heavier than the other. An examination of Fig. 4 shows that the officer in command did not understand the importance of balance, or he never would have allowed a rifle to remain in the bucket, causing the saddle to heel over. Adjustment of weight is always a difficulty. A feed of corn carried in a nosebag may help or disturb matters; under any circumstances it is a fluctuating quantity, for the bag is getting lighter as the day advances. Apart from the balance of weight the arch of the saddle may touch the withers. It is impossible for any mounted man to fail to detect this with his finger; a saddle resting on the withers is the cause not only of horrible suffering but prolonged, and frequently incurable, injury. A child could ascertain its existence when shown how, so that injured withers, besides being the most common, are also the least excusable variety of back injury, Many injuries were caused to both the withers and spine by the colonial saddles, for these were rarely wide enough in the front arch to prevent pinching, or curved up enough behind to clear the spine. The Australian stock-saddle, with its crupper staple, was a prolific source of trouble in this respect. After the withers and spine, the next place most commonly injured lay under the point where the rear arch is attached to the side-bar.

Whatever is carried on the saddle must not dangle about, but be securely fastened and all movement prevented. Nothing tires a horse so quickly as oscillating weight. If some satisfactory means for carrying the rifle could be found, other than attaching it to the saddle, it would be of material service to the horse. Dead weight attached to the saddle is more harmful than when the same weight is carried on the man's body. It is also easier for the horse to carry spare ammunition in a bandolier placed around the neck than to carry it on the saddle, especially in the wallets, where it aids indirectly in producing wither pressure.

It would be wrong to convey the impression that all sore backs are capable of prevention on service. When animals get below par the liability to injury is increased, and when, in addition to this, there is great wasting of the muscles of the back, the avoidance of injury due to the weight imposed is extremely difficult, for it is on these muscles that the weight is carried.

The Regulation head collar and bridle are generally represented as being too heavy. We agree as regards the bridle, but a head collar must be stout, for it experiences very great strain when the horse is tied up.* The bit is unduly heavy and of a wrong pattern. The bit and snaffle (bridoon) should be combined, and not in two distinct parts as at present, necessitating four reins. A single pair of reins should suffice, as in the Mounted Infantry bridle. Our present Cavalry bit is an instrument of torture in heavy hands, and "hands" are given to few men. On a long, hot and exhausting march it is a good practice to remove everything from the mouth, and ride the horse with the head rope placed over the nose. Parching of the mouth then occurs less readily.

* It might, however, be made of canvas, like a ship's head collar.

TRANSPORT BY SEA.

The old system of transporting horses by sea was to place them in a narrow and short stall, and put a sling under them. No attempt had been made officially to improve on this system until 1899, though the sea transport of horses was known to be attended by mortality, which was frequently high. In 1887 important improvements on the existing system were suggested. It is gratifying that the new ideas, if not originating with the Veterinary Service, were first put forward by it, and to Colonel Duck must be given the credit of drawing attention to a better system of carriage at sea.* He had gained his first experience in the Abyssinian War of 1869, when he observed, in the transport of mules, that the stalls were too short and the breast bar too high. The closely fitting "crate" into which an animal was packed, in what we shall term the Admiralty fitting, did not take into account, nor allow of, an animal altering the position of its body in order to maintain the vertical attitude during the rolling of the vessel. It is obvious that to effect this he has to "hang back" when the roll is from him, and lean forward when the reverse movement occurs. In a short stall, such a to and fro movement is impossible, and the foot hold is consequently lost. To compensate for this the sling was introduced to prevent the animal from falling, and in bad weather, when this was tightened, he behaved in it as a pendulum, and bumped to and fro.

When the introduction of steam facilitated the transport of horses by sea from one continent to another, the margin of profit could only be satisfactorily increased by cutting down expenses. The first regular, and at the same time most difficult, passage established for horse-ships under steam was between Australia and India, and the shippers in these used, for economy, a pen holding four or five animals, instead of a separate stall for each, and, to further reduce expense, did away with slings. They depended upon a good foothold to keep the animals from falling. They experienced a good deal of loss at times through fittings giving way in bad weather, but proved the important fact that slings were unnecessary to keep a horse on his feet. As a matter of fact, if tightly drawn up to the body, they actually carry him off his legs, and become a positive evil. It is not essential to this history to know all the sources through which this information was obtained. We assume that the Australian trade with India was the first on a large scale, but the Arabs, probably for centuries, have been shipping horses to India from the Persian Gulf, and though, of course, they chose their season for the passage, the arrangements for the animals were of the most primitive character. When the Trans-Atlantic trade opened up, and the shipment of horses from America ran into between twenty and thirty thousand animals a year, no slings were employed nor were separate stalls used. Boats were specially built, the pens having a maximum size of 15 feet × 9 feet; horses and cattle travelled in the same type of vessel. There were individual heavy losses but the average was remarkably small, 2½% and under for horses. The voyage, of course, was short, and the temperature may be taken as uniform, compared with a ship going from north to south.

Just before the war a Committee of War Office and Admiralty Officials was appointed to consider the question of the sea-transport of an Army Corps. Among other matters, that of the transport of horses had to be dealt with, and for this purpose Colonel Duck was a member of the Committee. The principles he laid down on this question in 1887 were those which he placed before the Committee, and he urged that a stall of greater length should be furnished. He pointed out that the short stall of six feet, in bad weather, did not give the horse sufficient room to resist the rolling of the ship, and that it was impossible for the animal to get his hind quarters far enough back when the decks were at a steep angle. In consequence, he was either shot forward against the breast bar or rubbed his quarters raw. By lengthening the stall the animal was given room to maintain his vertical position during rolling, and no slings were then necessary to keep him on his feet; in fact, the latter were, as explained above, even harmful.

Having given the horse room to move to and fro for the purpose of vertical adjustment, it only then remained, as Colonel Duck pointed out, to give him a reliable foothold in order that he might maintain his position. On this point he laid the greatest emphasis. What could men do in bad weather if everything they laid hold of to save themselves gave way under stress? The position is identical with that of the horse, which has to try and save itself through its legs, and will succeed if only he obtains a firm foothold against which he can press.

At this time—July, 1899—there were in store old pattern short stall fittings for 10,000 animals. The Committee urged that more modern measurements should be adopted, and money provided to furnish 6000 new fittings. It was not, however, until September, a few days before war was declared, that the Treasury approved of £25,000 being spent on fittings for horse transport.† Of course, these had not been put in hand when war occurred, the result being that only fittings of the roughest kind could be provided.

Another question dealt with by the Committee was the utilization of cattle boats as horse transports, a point urged by Colonel Duck, from personal experience, and supported, for the same reason, by General Truman, the head of the Remount Service. This turned out an equally satisfactory measure, and these vessels were subsequently largely employed.

* "Veterinary Hygiene," F. Smith, 1887, p. 297.

† R.C., *Q.* 2356, 9534.

This class of ship was specially built for the trade, and was furnished with bilge keels to keep them steady, water ballast, and ballast tanks, the latter not found in other types of ship (R.C. *Q.* 9807.) The water ballast enabled a large supply of fresh water to be carried, which was replaced as ballast by salt water let in. The vessels also were well drained, and naturally adapted themselves to the erection of stall fittings, in place of the pens usually employed in the trade. The standings were cemented. The existing number of ships of this type was obviously limited, and, as matters turned out, many were employed which were not designed for animal transport.

It is noteworthy that in the subsequent official inquiries both the Inspector General of Remounts* and the Admiralty† laid claim to originating the new fittings. Colonel Duck's name does not appear.

This general statement enables the position of affairs at the outbreak of hostilities to be understood. The old system of carrying horses in short stalls was in theory discarded, and trade methods adopted. In one respect we carried this too far, and that was in the neglect of sanitary precautions, a matter not so obvious in a short trans-Atlantic passage as in a 30 days' journey, part of which was through a tropical zone.

When war broke out on 12th October we possessed no new fittings, but the Admiralty showed their usual promptitude in dealing with a situation where common sense and energetic action are required. Plans of the new fittings were soon got out, a small army of carpenters employed, and in a few days fittings corresponding to the recommendations of the Committee were erected on the transports. They were rough, of green and undressed timber, and long French nails were employed where screws only should have been used. They possessed one great defect, and that was the weakness of the slot into which the parting boards between each stall were placed. The slot was not only too shallow, but was formed by two pieces of wood being nailed on to the uprights, or stanchions, of the stall. When this weakness was pointed out to Naval Transport Authorities it was not considered by them to be important, and the Veterinary objections were overruled. In a few days they purchased, at public expense, a lesson to which reference will be made later. In spite of the haste the troops were on board before the fittings were completed, and the ships, in some cases, left the dock with the carpenters still at work. ‡

The scale of measurements laid down for stalls and gangways was excellent in theory, but frequently fell short in practice, especially towards the ends of the vessel. Here it was difficult to walk between the animals' heads excepting by going sideways. There must be ample passage room, not only for the purpose of ventilation, but for exercise. It is wholly wrong that horses should be almost head to head, each breathing the vitiated air of his opposite neighbour. Especially was this the case in those ships carrying Remounts under freight charter, where the owners' chief object appeared to be to stow away as many animals as possible irrespective of sanitary requirements. °

The lengthening of the stalls from six to eight feet carried the standing up to the side of the vessel. There was consequently no alley-way behind the horses for the purpose of clearing out the dung. This had been anticipated, and the objection was met by the Authorities saying that in the trade the standings were not cleaned out during the voyage, and that the troop horses were to travel under similar conditions. This showed a want of knowledge of the amount of excreta a horse produces in a voyage of thirty days; behind mares it was a foul pool of pultaceous fæces fetlock deep; behind geldings it was a mound which raised their hind quarters considerably above their fore hand, and threw considerable strain on already tired fore legs. In the C. of E. Rem: a strong effort was made to ascertain who was responsible for giving this order, but nothing definite resulted. As a matter of fact, on transports carrying troops the putrid mass had to be removed, as its overpowering stench cannot be described. On Remount ships the labour for cleaning out the stalls did not exist, and for 30 days the hind feet were either buried in a quagmire, or the horse standing down hill. † Cleanliness is the keynote to efficiency on board ship. There are sufficient other detrimental causes affecting horses without adding to them and, moreover, ruining the hind feet.

It is not our intention to enter into details of construction of the stalls employed, but only to indicate general principles, and the weak points in those erected for transport purposes during the war. To one of these allusion has already been made, *i.e.*,

* C. of E. Rem: *Q.* 1718, 4410, 4530.

† R.C., *Q.* 9793, 9804.

‡ It may be noted that it takes 12 days to fit up a troop transport to carry Cavalry. The tonnage allowed to a horse on a transport, that is, a ship carrying troops, is 11½. In Remount ships 6½ tons per horse, and 3 tons per mule were allowed; the mule tonnage is only one-fourth that of a horse, as they are carried in pens instead of stalls. In consequence, a ship which carries 700 horses would carry 1000 mules. (*Q.* 4517.)

* The Admiralty approved of a Remount boat, the "Manchester City," which subsequently turned out a "Black Hole." They accepted the owners' statement that she would carry 2500 mules without apparently verifying the calculations. She carried 2090, about 500 too many, and experienced shocking losses, an account of which is given later. See C. of E. R., *Q.* 4176, 4397, 4413, 4415, 4442, 4445, 6155.

This, and another equally unsatisfactory ship, the "Anselma de Larrinaga," were both engaged, not only under freight charter, but the owners were permitted to carry the animals as they would do their own, an objectionable clause which encouraged overcrowding, and robbed the conducting officers of the right of veto.

† We shall see presently the trouble in which this involved two Veterinary Surgeons. Yet the Authorities, when they reported these cases, must have known that all Remount ships were in a similar condition.

the side bars dividing the horses, which were not only too weak in substance, but too shallow. The slot, it will be remembered, consisted of two pieces of wood placed parallel to each other and *nailed* to the upright. These were frequently kicked away, and the boards fell out. The slot ought to have been cut into the uprights, and the boards would then have been secure. The breast bar on Remount ships was generally one long piece common to four or five stalls, so that in order to take a horse out of his stall, the bar in front of four or five others had to be removed. The breast bar for each stall should be distinct, as on troop transports. The bar also must be a different height for horses and mules. If too high with small animals it injures the front of the neck. There must always be three stanchions to two horses, and not two, as in some Remount fittings. The flooring must be of wood, with cross battens placed in the right position for catching the feet. These battens must be thoroughly well secured, as there is a great strain on them. The importance of a sound flooring cannot be too strongly insisted upon. In bad weather everything depends upon the horse maintaining its foothold, and this can only be ensured by good and properly placed battens. If these are not in the right position, there is nothing for the feet to press against. It is convenient to have the flooring in two pieces, for facility of lifting, as the deck beneath requires flushing. The haunch piece must be hollowed to receive the shape of the animal, or be, at least, rounded. Some horses rest against it when tired, and, in a short stall, this is a normal condition. If the timber is not round it causes injury.

Mangers should be of galvanized iron, and removable from the breast bar. They must be furnished with two bars, which prevent the horse from throwing his food out. They should be washed out under the hose every day. Spare mangers should be carried. The canvas head collars of the ship should be in three sizes. A large head-collar on a small horse causes the nose band to compress the nostrils: a small collar on a big head cuts the jaws, and leaves no room for movement during mastication.

Feeding on long hay is always a wasteful process: on board ship there is no word which adequately expresses the loss so occasioned. If the hay is placed in the mangers it is simply thrown out by the horse, and trampled under foot. Long hay should always be placed in hay nets, small quantities at a time. It necessitates slow feeding and keeps the animals quiet. Watering is a feature which requires the supervision of the officer; every pail of water has to be carried and lifted up to the horse, and men will not do this unless supervised. The importance of ample water cannot be exaggerated, especially in passing through the tropics, and for those horses placed near the engine room.

During the War the feeding of animals on board ship was defective, especially at the beginning of the campaign. Commanding Officers were cautious to nervousness, so afraid were they of overfeeding with grain. So marked was this in some cases, that on the advice of the P.V.O., the General at Cape Town cabled to the War Office, in February, 1900, that it was better some horses should be lost from overfeeding, than that animals should arrive full of soft food, and quite unfit to work.* Later, as experience was gained, the feeding became more liberal. Sometimes the forage was to blame. If a ship goes to sea with defective food on board there is no changing it. Such cases were known, and resulted in the condign punishment of those officers who passed the forage. Insufficient food may occur from a breakdown or other delay, and this was anticipated by a week's extra rations being placed on the ship over and abcve the amount required for the voyage. Cases occurred where forage was short shipped, and horses were landed in lamentable condition. One of these we shall be compelled to look at in detail.

In a voyage lasting a month, it is certainly sound practice not to overdo the grain ration during the first week; but to reduce it to one pound a day, as we have seen done, is an absurdity. During the last fortnight of the voyage the animals may be more liberally fed with grain. There is a good deal of waste in feeding, especially with hay. Only small quantities at a time should be placed in the hay nets, say two pounds. It takes a long time to pull this through the mesh, but it avoids the sinful waste which generally occurs, and keeps the horses occupied. Carrots or roots are excellent, but they keep badly at sea.

The conveyance of mules is in principle the same as that for horses, with the exception that they are not usually placed in separate stalls, but in pens holding four or five animals. The mule is a better sailor than the horse, more placid and philosophical. His worst feature is that he eats his fittings, and reduces them to matchwood. All parts exposed to his teeth should be sheathed with iron. Similarly, head ropes are of no use, they are eaten in a day or two. Nothing but chains should be employed.

Something must be said of the Transport arrangements if we are to understand the conditions under which the animals were carried. The Admiralty conveyed all troops together with their horses. Such ships were engaged on time charter, the Transport Department providing the coal and paying all dues. These ships were specially fitted for men and horses in home ports, according to principles previously arranged. The Admiralty also conveyed all remount horses (not accompanied by troops) from the United Kingdom, and mules from everywhere. Ships for remount horses and mules were differently engaged; the animals were carried on freight charter at so much a head, and the capitation rate had to cover cost of fittings, forage, attendants for the care of the animals, water, utensils, and every other charge. Beside the Capi-

* Cd. 963, Cable 32.

tation rate there was a bonus for each animal landed alive.

The two different systems here indicated may be described as hired transports, and freight ships, and this distinction must be borne in mind if we are to understand the differences in management, and difficulties which subsequently arose.

The Admiralty, however, did not make arrangements for the transport of all the remounts purchased. Owing to their hands being full, the Inspector General of Remounts made arrangements of his own with a Shipping Company, for conveying horses on freight charters, and for seventeen months this system continued, until finally the Admiralty took it over.

The capitation rate was at first calculated on the number of animals embarked, but was subsequently divided into two parts: one being paid for each animal taken on board, and the other for each animal landed. In this way, the interest of the owners in the safe conveyance of the animals was assured.

All animals conveyed in freight ships suffered under a great disadvantage as compared with those travelling with troops in transports. A military conducting Officer and a Veterinary Surgeon were to accompany each freight ship, though, owing to the difficulty of obtaining the services of these two classes, some of the early ships were not so provided.

Conducting Officers possessing the needful qualifications were, no doubt, difficult, if not impossible, to obtain in sufficient numbers. Of 195 so engaged 109 were Lieutenants or Second Lieutenants, and, therefore, of extremely limited experience; further, 34 of this number belonged to the infantry.

Of the total number of Officers of all ranks employed on ships, 70 belonged to the infantry. It is difficult to see, so far as the animals were concerned, what purpose Officers of this branch served. The above figures show what a large proportion of conducting Officers were entirely ignorant of horses, let alone of their care and management at sea.

The Civil Transport Veterinary Service was quite distinct from that created for employment in the Field. Many of the veterinarians were foreigners, and it is now known that some of these possessed no qualification. No matter how experienced a man may be on land, it is certain he has a good deal to learn when he first goes to sea with horses, so it was desirable, as far as possible, to retain the services of those practitioners who had already obtained experience. The evidence of witnesses before the Royal Commission and Court of Enquiry Remounts, was generally to the effect that the Veterinary Transport Service conducted by British practioners was successfully carried out; there were exceptions, and, no doubt, there were men who, from an absence of personality, failed to make themselves felt.

The care and constant supervision which horses everywhere require is greatly increased on board ship. But for this purpose it is sufficient on troop transports that one man should look after four or five horses; all men over and above this proportion should be cleared out of the horse decks in order to increase the extremely small air space. On troop transports the difficulty is not to find labour, but to employ it skilfully in the confined space. On freight, *i.e.*, Remount vessels, there were no soldiers; civilians were engaged for the voyage, and the condition of the horses at the end of the journey, other things being equal, largely depended upon the manner in which these men performed their duties.

The proportion of attendants to animals on this class of vessel was fixed at one man to 15 horses or 20 mules; had they been trained men at the work it might have sufficed to water and feed the animals, but not for cleaning out the stalls. They were not, however, skilled men; many knew nothing of horses, nor had experience of the sea; they were drawn from all classes and conditions, and were difficult to keep under discipline.* Some of the witnesses expressed themselves on this point in more forcible language than the Court, for even mutiny was not unknown.† It must be remembered that in the tropics it is not possible for a man to remain long in the lower decks of a horse ship, especially amid such insanitary surroundings as we have described, without feeling faint or being actually sick, and we are strongly of opinion that the labour provided for the care of the horses on freight ships was insufficient. It ought to have been not less than one man to 10 horses. The Report of the Court of E. Rem : points out in para. 118, that the master of the vessel did not always concern himself with the way in which the men carried out their duties, and that men were frequently short shipped. Under these circumstances it is not remarkable that horses were landed in bad condition. Later, during the war, there was an improvement in this respect, as the men were prohibited from landing, so that they were no longer being carried in order to enlist in the first irregular corps requiring recruits, or, as was reported, joining the ranks of the enemy.

It seems to us essential that the great difficulties the conducting Officers and Transport Veterinary Surgeons had to contend against in the care of horses on board ship should be clearly realised this is especially necessary in order to understand the cases yet to be narrated.

One witness gave evidence that the labour party (in this case soldiers) was removed from the ship before the horses were landed, and that he and the first engineer of the vessel had to water and feed them!‡

The relationship between the Sea Transport Veterinary Service and the Military Conducting Officers cannot be described as cordial. Their duties overlapped, a fruitful cause of difficulties;

* Report of C. of E. Rem., para. 119.

† See C. of E. Rem., *Q.* 5514.

‡ C. of E. Rem., *Q.* 3991.

there was also a natural ignorance of military system on the part of the veterinary element, and there was the determination of the conducting officer to retain some semblance of the authority with which he was undoubtedly invested. We cannot think that the cause of difficulties and misunderstandings was always on the veterinary side, and some evidence will be quoted in support of this view. Both were in an extremely difficult position, demanding great tact, for each was under the Commander of the vessel, in whose hands the labour party was placed. When difficulties arose orders to the men had to be transmitted through the Captain of the ship, so that the conducting officer frequently found himself in a doubtful and humiliating position of responsibility. *

The chief cause of friction between the conducting and Veterinary Service arose from interference with purely professional duties. Some conducting officers expected the Veterinary Surgeon to carry out their treatment. One insisted that all temperatures should be taken at the mouth, with the result that the thermometers were soon destroyed. Another suspended the Veterinary Surgeon from duty without good reason. One insisted, against veterinary advice, in shooting, as glandered, every horse with a nasal discharge. This case came before the Court of Enquiry Remounts, who, in referring to the destructions, say, "In so doing he acted upon his own responsibility, without the advice of the Veterinary Surgeon on board."† The full facts of this case were before the Court, and it was known the officer acted *against the advice* of the Transport Veterinary Surgeon, and in spite of his remonstrations, we shall, therefore, give an outline of the case.

The s.s. "Cervona" left New Orleans on 8th Feb., 1901, with 849 horses on board, an Artillery Captain as conducting officer, and a British Veterinary Surgeon. There were many cases of catarrh—a common complaint on board ship—and the Artillery Officer got it into his head that the animals were glandered, in spite of veterinary representations to the contrary. He then stated his intention of shooting them, and was advised that there was no necessity, as the animals were free from contagious disease. He shot no less than 251, representing £17,500, and, but for bad weather, would have destroyed many more, but could not get the carcases overboard. Including deaths from other causes, he arrived in Table Bay with 571 animals, all of which he regarded as glandered.

It is, perhaps, as well that the statement of the General Officer of Cape Town on the matter should be given; it appears in the Royal Commission, *Q.* 13,783;—

"One Artillery Officer, on arriving, said that the whole of his horses had been suffering from glanders, that he had already thrown 50 overboard, and regretted that he had not had time to throw more over. On a Veterinary examination it turned out that there had not been a single case of glanders on board; one or two horses had suffered from something or other, and he threw them over the side wholesale, and the horses adjoining, and the horses two or three off."

It is interesting to note that this astonishing evidence did not provoke a single question from the members of the Royal Commission. The matter, as we have seen, was even worse than was represented. In the C. of E. Rem: General Truman gave evidence, *Q.* 1903, *et seq.*, that 251 horses were unnecessarily destroyed, and that the Military Officer overrode the decision of the Veterinary Surgeon, and acted entirely on his own responsibility.

The C. of E. Rem: deal with the matter in nine lines, contained in paras. 125 and 182. Here we are told that "he acted on his own responsibility, *without** the advice of the Veterinary Surgeon on board." The Court had it in evidence that he acted against the advice of the professional man.

We may complete the story by adding that the animals were examined at Cape Town, and again, by a Veterinary Board on reaching their destination, at Port Elizabeth, and the opinion given was that no case of the disease existed on the ship, and probably never had. This important fact is not mentioned by the Court of Enquiry.

There were two cases seriously involving the credit of the Transport Veterinary Service, to which great publicity has been given, both by published cables and especially by the Court of Enquiry Remounts. We propose, in the interests of the profession, to examine the facts, as they impute charges of grave neglect. The ships implicated were the "Knight Bachelor" and "Monterey," from North America. Their respective Veterinary Surgeons were foreigners, a fact which is not stated in any of the reports.

The horses on these ships were, it is said, in charge of the Veterinary Surgeon, there being no conducting officer. If this were so the position was one of increased responsibility and trust.†

The "Knight Bachelor" arrived at Port Elizabeth from New Orleans on 27th July, 1900, after being 41 days at sea. One thousand horses had been shipped, of which 44 had died (4.4%). The Military Landing Officer at Port Elizabeth reported ‡ that he boarded the vessel on arrival, and found "the whole place inches deep in decomposing stagnating filth." The horses were "literally packed like

* See C. of E. Rem., *Q.* 3989, 4074, 4076.

† Report, para: 125.

* The italics are ours.

† The Inspector General of Remounts stated, in *Q.* 6916, that Veterinary Surgeons were not in charge as conducting officers, but only to perform professional duties. He adhered to this, though the case of the "Knight Bachelor" was specifically referred to.

The Court of Enquiry, in their Report, do not settle the point. In para. 176, they say, in the absence of a conducting officer, "the entire responsibility for the safety and well-being of the cargo falls upon the master." Yet, in para. 182, they say, "written instructions should have been given to the civilian Veterinary Surgeons, who, in certain cases, were in sole charge of horses on board ship."

It is difficult to reconcile these three statements. Matters of the deepest importance to us as a body depend upon whether the Transport Veterinary Surgeon could or could not be placed in charge as conducting officer.

‡ C. of E. Rem: *Q.* 6044.

herrings, and even the ship's coal bunkers had been utilised to place them in." The fittings were inferior and flimsy, splintered and wrecked beyond conception. There were only 37 cattlemen to look after the horses, or 27 horses per man. "Consequently no cleaning had been attempted. The accumulated filth of 41 days at sea is better imagined than described. The ventilation of the lower deck was defective, and the steam fans did not appear to have been at work systematically. Many of the water tanks contained putrid water, the mangers were small and unsuitable." . . . "I attribute the semi-starvation the animals undoubtedly sufered from, to the fact that the horses tossing about the hay, as is their wont, led to the hay falling out of the troughs on to the decks . . . . ." The forage supply placed on board was totally inadequate to the number of horses shipped and the length of the passage, or it had been shamefully wasted. They appear to have run out of hay nine days before reaching Cape Town, where more had to be taken on board to allow of the ship proceeding to this port. The animals, according to the cattlemen's reports, had been fed on bran for ten days prior to the ship's entering port."

"The civilian Veterinary Surgeon put on board to look after the animals . , ... was totally incompetent, and could not have exerted himself in the least. The Cattlemen report that he was seldom seen between decks."

The statement of the filthy condition of the vessel, and the semi-starved state of the horses is supported by a letter from the Divisional Transport Officer, Royal Navy, contained in *Q*. 6046.

The Veterinary Report by the S.V.O. Remounts, Port Elizabeth, is given in *Q*. 1861, and is as follows:—

"Nothing could convince me to the contrary that there was not culpable neglect in the feeding of these horses, and the majority of the emaciated showed no symptoms of disease, either past or present, and yet were living skeletons. This in itself distinctly points to starvation pure and simple."

The Court of Enquiry received none of the above evidence on oath, nor were any of the witnesses examined. The statements are accepted as fully established, and in their Report presented to Parliament, para. 117, they give an outline of the case, and conclude by saying, "There was no conducting officer on board, and the horses were in charge of a civilian Veterinary Surgeon, who had been engaged for the voyage at New Orleans, ... The horses were half starved, and so grossly neglected that it was considered that the majority would be useless."

The entire onus for the condition of these horses is placed by the Court on the civil Veterinary Surgeon in charge. Yet five features stand out very clearly; (1) The Inspector General of Remounts told the Court that the Veterinary Surgeon was not in charge (see foot note, p. 256); (2) The Veterinary Surgeon was not responsible for the overcrowded state of the vessel; (3) Nor for the short shipment of forage; (4) Nor for the bad type of manger; (5) Nor for the short shipment of cattlemen. For these deficiencies the Remount Authority at the port of embarkation must be looked to, and, as a matter of fact, this was the view taken by the Secretary of State, who, in consequence, directed him to be recalled from America (see C. of E. Rem. *Q*.6059). Nowhere in the Report made on this vessel by the Court of Enquiry is the Remount share in the disaster referred to, or the Secretary of State's action thereon mentioned, though the facts were before the Court. The omission is perfectly unaccountable.

But the case is even still more unfavourable to the Remount Authorities, for it was by the order of the agents of the Remount Department that the stalls were not cleaned out. Every effort made by the Court failed to ascertain who actually was responsible for this as a general order for all ships, transport and freight.* It was known to be the method followed in the trade (see p. 253), and in the Cavalry (see p. 234), and was approved by the Inspector General of Remounts (*Q*.1676, 6878), himself a Cavalry Officer.

Under instructions received at New Orleans the veterinary surgeon on the "Knight Bachelor" did not have the stalls cleaned out (*Q*.6052), nor would the labour on board have secured this even had he gone contrary to his orders. We have it also in the evidence of the Remount officer at New Orleans (*Q*.1247), that the "Knight Bachelor" was a ship that he always had a difficulty in getting properly cleaned [in port], and to effect this he had three times more trouble with this vessel than any other. For this unsatisfactory state of affairs he blamed the captain and crew (*Q*.1243).

In the face of this evidence, all of which was before the Court, is it possible to hold the civil veterinary surgeon responsible for the filthy condition of the "Knight Bachelor" on her arrival at Port Elizabeth? Not a word of the above appears in the Report of the Court of Enquiry to assist in explaining the disgraceful condition of this vessel. The report of the military landing officer is the text of their indictment.

One might have thought that the "Knight Bachelor" was the first vessel to arrive in Africa with stalls on the "Continental system" (see p. 234). But more than 260 vessels had entered one or other of the four South African ports between the outbreak of war and the arrival of the "Knight Bachelor," and all were in principle, if not in practice, arranged for on this system. It was only on troop transports that the abomination could no longer be tolerated, and a superabundance of labour was available for clearing away the accumulated filth from beneath the horses.

We, therefore, submit that the veterinary surgeon of the "Knight Bachelor" was not morally responsible for her condition, that her overcrowded state and shortage of labour rendered it practically impossible to clean her, while the condition of horses was due to insufficient forage having been placed on board. We cannot help but feel that the Court should have arrived at the same conclusion.

The Court charges this Veterinary Surgeon with incompetence. He may have been incompetent, but there is no evidence to that effect, excepting

* See "C. of E. Rem. Evid.," *Q*. 1673 to 1676, 1678.
Q. 4975 to 4978.
Q. 6052 to 6054.
Q. 6877 to 6924.
See also *Report*, paras. 181, 182.

the *ipse dixit* of a layman, an Army Lieutenant, whose report we have quoted.

There was, however, in this case a feature most disgraceful if true. The Military Landing Officer, in continuation of his report, in *Q.* 6044, says:—

"The same Veterinary Surgeon, when ordered to proceed ashore to report his arrival to the O.C. No. 2 Remount Depôt, did not do so, and had not done so up to the time he sailed in the ship without orders. When he did come ashore he became hopelessly intoxicated."

The C. of E., it will be remembered, had none of this Officer's evidence on oath, and no man can be convicted of drunkeness unless on corroborative evidence, of which there appears to have been none. The official statement is that he did not report himself, and it would seem, therefore, that the charge was made on hearsay, which no court of jurisdiction would accept. Nevertheless, the C. of E. Rem. state in their report, that he "*came on shore* * in a state of intoxication!" No such statement occurs in the official report of the Military Landing Officer; he is there charged with becoming drunk while ashore, and, without in any degree condoning the reported state of this man, there is as great a difference in coming ashore drunk from his ship, as there is in an officer going drunk to mess—which is a court martial offence—and returning drunk after mess.

Nothing appears to have been omitted which could tell against this Transport Veterinary Surgeon. In the report of the Military Landing Officer the cattlemen are quoted as his authority for saying that the Veterinary Surgeon was seldom seen between decks during the voyage. It may have been so, but the statement of men from whom he had, under evident difficulties (see *Q.* 1243), to extract work, should not be permitted to carry weight, especially, as we have the authority of the Assistant Inspector of Remounts, S.A., for saying, they were "the riff-raff of the New Orleans and Liverpool slums." †

Even the small mortality on the vessel is not permitted to tell in the Veterinary Surgeon's favour, for the Military Landing Officer actually stated that *he* ascribed the low rate of mortality "entirely to the hardiness of the poor animals, in spite of the criminal neglect they have been systematically subjected to!" It is difficult to conceive a statement of greater prejudice. We cannot help blaming the Court of Enquiry for not stating the whole facts of the case, and for too readily adopting the report of the Military Landing Officer. We submit that, bad as were the facts connected with the "Knight Bachelor," the entire blame should not have been placed by the Court on the Transport Veterinary Surgeon, and this was the view of the Secretary of State for War. We blame him, but for a different reason to that given by the Court. He should have refused to take Veterinary charge of a vessel so overcrowded and with insufficient labour on board. These were facts patent even to a layman. The flimsy state of the fittings and the small mangers were also obvious, and ought to have been objected to, if he were actually in charge of the horses as conducting officer. He could know nothing of the shortage of forage. He was told not to clean out the stalls. The unsuitability of this dark and slow ship cannot be placed to his credit, as it was engaged by the agents of the Inspector General of Remounts. We blame him if, as is stated, the drinking water in the tubs was putrid, assuming that the supply in the tanks of the vessel was sound and sweet, for these he could himself have emptied on the deck. As to his reported condition ashore, we have seen reason for believing that all the elements for a mistake exist, as he never reported himself.

The second case is that of the "Monterey," which left New Orleans on 7th August, 1900, with 1168 horses on board, in charge, it is said,* of a Civil Veterinary Surgeon, a foreigner. She arrived at Cape Town on 10th Sept., and the vessel and horses were inspected by the Staff Officer for Remounts, who was "satisfied as to the condition of the horses and the ship, excepting as regards the mucking out.'" † The Captain of the vessel, stated to the owners (*Q.* 5999, 6012, C. of E. Rem.), that at this inspection he was complimented on the appearance of the horses. The ship did not disembark her horses at Cape Town, but proceeded to Durban. On her vogage to this port, which occupied five days, she met with heavy weather. On her arrival at Durban, instead of the horses being at once disembarked, the ship was anchored at sea, outside the harbour, and kept there for two days, where she rolled incessantly. In the finest weather a ship rolls heavily at this point, and at the time we are speaking of a gale was blowing. At the end of two days she was brought into port, and the vessel and horses inspected by the Assistant Inspector of Remounts, Natal.

His evidence, given before the C. of E. Rem., is contained in *Q.* 2832. He stated that the vessel was in a "deplorable condition; the horses frightfully overcrowded, up to their hocks in muck, and in miserable condition." The number of deaths during the voyage was 25, or 2.14%. "Only 500 horses were fit for issue on landing, the remainder being too debilitated to warrant any hope of their being fit to send to the front within a month." ‡ The witness attributed the poor condition of the horses to "the faulty arrangements of the ship, to the absence of any proper system for their care, and to the fact that the stalls were not

* The italics are ours.

† Cd. 963, p. 18.

* See footnote p. 256.

† Report of the General Officer Commanding, Cape Colony, C. of E. Rem., *Q.* 6024.

‡ Report of the General Officer Commanding, Cape Colony, C. of E. Rem., *Q.* 6005.

once 'mucked out' during the six weeks of the voyage." *

The report on this ship gave rise to considerable War Office correspondence with South Africa, and the General at the Cape, after referring to the satisfactory condition of the horses when inspected at Cape Town by his Staff Officer, reported, "there is every reason to believe that the subsequent loss of condition in the animals was due to bad weather at sea between this port [Cape Town] and Durban, and possibly to the effects of the weather when lying off that harbour. † The whole of this correspondence was produced and placed before the Court. Yet the opinion they have recorded on this case, in paras: 116 and 176, is that the horses were starved and neglected, so that two-thirds were unfit for service for two months. The Court adds that they were in charge of a Civil Veterinary Surgeon, who was incapable, and that the stalls had not been cleaned out during the voyage. No mention is made of the satisfactory condition of the horses when inspected at Cape Town a week earlier, nor of the bad weather between that port and Durban, nor of the ship being kept outside for two days in a gale.

It is little short of extraordinary that a Court specially charged to investigate this matter does not refer to the incomprehensible action of the naval and military authorities in keeping this vessel outside the harbour at Durban for two days, instead of at once unloading her, though the seriousness of such action is obvious. We contend that this, and the fact of the satisfactory inspection of the horses at Cape Town, together with the opinion of the General Officer at Cape Colony, should have found a place in their Report. Nevertheless, these facts, in the opinion of the Quarter Master General War Office, "changed the whole aspect of the case.' (*Q.*6004). The Court also was aware that the non-cleaning out of the stalls was due to the instruction of the Remount Officer at New Orleans, but in the face of this, the entire blame for the "Monterey" is centred in the Civil Veterinary Surgeon.

Unfortunately he seriously prejudiced his position by being found "drunk and incapable" (*Q.*2832) in his cabin on the vessel being brought into the harbour at Durban. He was seen in this condition by two officers, so that, to our shame, the fact is established.

It would have been a gracious act on the part of the Court to have mentioned the favourable reports received on this Transport Veterinary Surgeon, as they did in the case of the Remount Officer removed from his position by the Secretary of State (*Report*, para. 95). ‡ It was before the Court that the Remount Officer at New Orleans had stated to the Inspector General of Remounts (*Q.*5999) that the Transport Veterinary Surgeon of the "Monterey" was a competent and hard working man, specially selected for the position, and that the Captain of the vessel had stated he had never seen a man work harder during the voyage, and that he was "never intoxicated except upon the regrettable occasion mentioned."

It would also have been just to the veterinary profession in this country to have stated that neither of the Transport Veterinary Surgeons mentioned above held a British qualification, and that both were foreigners.

The Court, in their Report, para. 176, sum up their opinion on the "Knight Bachelor" and "Monterey" as follows;—

"With reference to the particular cases of the s.s. "Monterey" and "Knight Bachelor," the primary cause of the starved and neglected condition of the horses was clearly the absence of a conducting officer. In both instances the Veterinary Surgeon was incapable, and it does not seem that the master of the ship considered that he had any responsibility in the matter. The attendants were the servants of the ship owners, and were under the command of the master, and as there was no conducting officer on board, the *entire responsibility for the safety and well being of the cargo fell upon the master.*" *

We have placed before the reader all the facts of both these cases, and he must judge how far these warrant the conclusion drawn by the Court of Enquiry. The opinion given of the responsibility of the master relieves both Veterinary Surgeons of the charge of starvation and neglect. Nevertheless, in spite of this declaration, the Court, in para. 182, were of opinion that "written instructions should have been given to the civilian Veterinary Surgeons, *who, in certain cases, were in sole charge of horses on the ship.*" † It is difficult to reconcile these differences of opinion.

Of the alleged professional incapacity no evidence is adduced, while, if mortality be taken as the index, it is, especially in the case of the "Monterey," entirely in their favour.

Nor can we help remarking on the freedom of language employed by the Court in describing these men, as compared with the moderated tone adopted in dealing with Military Officers. With these incompetence becomes "unsuitable" (para. 163), or "desirable to withdraw" (para. 95); inefficiency is described as "a weak point" (para. 225). Even the astonishing "Cervona" case becomes one of "a peculiar nature" (para. 125), and the officer is merely described as "unsatisfactory" (para. 182).

There is a third transport case to be dealt with. It did not find a place in the Report of the Court, but there is a great deal about it in the Evidence volume, which requires explaining.

The "Rippingham Grange," a ship engaged by the Agents of the Inspector General of Remounts, left Sydney on 12th June, 1900, with 1085 horses in charge of a Colonial Veterinary Surgeon, there being no conducting officer. The vessel arrived at Durban on 14th July, after a very bad passage (*Q.*6030), and, instead of disembarking her weary

* Report of General Officer Commanding, Cape Colony, C. of E. Rem., *Q.* 6005.

† Report of General Officer Commanding, Cape Colony, C. of E. Rem., *Q.* 6024.

‡ This History, p. 257.

* The italics are ours.

† " "

horses at once, she was kept outside the harbour for six days in a gale (*Q.* 6025), during which time she could never have ceased rolling. The Agents at Durban apprised the War Office by cable of the unfair strain to which these wretched animals were needlessly exposed (*Q.* 5538), and under cable instructions from the War Office (*Q.* 5540), she was brought in and her horses unloaded. Such are the facts of the case.

When the Assistant Inspector of Remounts boarded the vessel in Durban Harbour, he found, according to his report (*Q.* 2900), that 140 animals had died out of 1005 embarked, and that many were so debilitated that some 20 had to be destroyed on board. The balance was stated to be in such "a shocking state of debility" that they would be unfit for duty for many weeks. Later (*Q.* 2902), the same witness placed the period of inefficiency at six months, but he apparently had no notes to guide him, and even with notes, his evidence on other matters was remarkable for inaccuracies; for instance,—1085 horses embarked, and not 1005, as stated by him, while the deaths were 104, and not 140.*

The Remount Officer in Australia was communicated with, and his opinion was that the Transport "Veterinary Surgeon turned out very badly" (*Q.* 7555), but no reason for this opinion was given. When the Assistant Inspector of Remounts, Natal, was pressed (*Q.* 2905) as to the condition of the horses being the result of the effects of the voyage rather than of neglect, his reply was, "that I cannot tell . . . . . they told me they had had a very bad voyage."

The Quartermaster-General and Remount Authorities at the War Office, 7000 miles away, were, however, satisfied that the rough weather and "other causes" accounted for the condition of the horses landed. The "other causes" are not specified, but, clearly, they indicate the detention of this vessel, anchored in the open sea for a week during a gale and ceaselessly rolling. The only wonder is that she did not lose more than 9.8% of her horses. The fittings did not give way, and the deaths were caused by "absolute exhaustion" (*Q.* 6035).

The Court of Enquiry does not refer to this case, which reflects so gravely on the Naval and Military Authorities at Durban. In common fairness, the charge made against the Veterinary Surgeon in *Q.*7555 should either have been substantiated or withdrawn. We regret to notice a willingness to find especial fault with the few ships which came over with Veterinary Surgeons said to be acting as conducting officers. For example,—the Assistant Inspector of Remounts, Natal, in *Q.* 2828, in speaking of some ships arriving without either a conducting officer or Veterinary Surgeon on board, stated that even if there was one of the latter, "he was probably a man not worth anything," and we have met with this elsewhere, notably in *Q.* 6044. The Assistant Inspector of Remounts, S.A., in his report on the relative advantages of sending Remounts by "troop transport" or "freight transport," referred to the "gross neglect and inefficiency," in some instances, of the Civil Veterinary Surgeons and others in charge of animals from North America and Australia.** By the term "others," it is assumed conducting officers are intended. This ought, we think, to have been made clear, and not only the Transport Veterinary Service indicted. That there were conducting officers who failed is stated in the evidence of the Inspector General of Remounts.† He further added, he had recommended their services to be dispensed with, and that in some cases higher authority had deprived them of their medals and gratuity.

In the face of this evidence it is difficult to understand how the C. of E. Rem. could state that "the *only conducting officer*‡ whose management was reported to be unsatisfactory was the officer in charge of the 'Cervona.'" This reproach is very mild as compared with the stigma applied to the Transport Veterinary Surgeons.

LOSSES AT SEA.

The total number of horses which embarked from all ports for South Africa during the war is given as 352,353, of which 13,144 died or were destroyed on the passage.** This loss represents 3.73%, but these figures are vitiated in one respect, inasmuch as the losses at sea include, in some cases, the losses prior to embarkation. The total number of mules embarked was 105,491, of which 2816 died or were destroyed at sea, or a loss of 2.67%. These numbers also are not strictly correct, from the cause above named. Nevertheless, the table is important as it covers the whole period of the war.

There are several other tables. One is in Appendix 38a of the Royal Commission, which covers the entire period of the war, though it does not include the Yeomanry horses. There are several in the Evidence volume of the C. of E. Rem., pp. 210, 326, and some in Parliamentary Papers, Cd. 963, pp. 30-32, but these only cover a part of the war, or for broken periods, or from certain ports only, and are compiled from data which do not admit of comparisons being made. There are also discrepancies among tables which should agree. We have thought it best for the present purpose to neglect all of these excepting Appendix 38a, and Parliamentary Paper Cd. 963. The latter covers the period from the outbreak of war to 31st December, 1901, or five months short of the full time. It is evident that all the tables are either incomplete for the full war period, or wanting in rigid exactitude, so that the results can only be taken as a close approximation to the truth.

† For other inaccuracies in this witness's evidence, see C. of E, Rem., *Q.* 2829 and 3559; 2830 and 3519; 2816 and 3488; 2904 and 6035; 3619, 3622, 3647, 3653, 3656, 3659, also p. 293, "Evidence Volume."

* Cd. 963, p. 17.
† C. of E. Rem., *Q.* 1824.
‡ The italics are ours.
** R.C. Appendix No. 38, p. 258.

A more important matter than the mean loss at sea, is that of the losses from each country. These, with the above qualification of being mixed up, in some cases, with the losses prior to embarkation, are given in the following table compiled from Appendix 38a. The mean given is that of the series of percentages in the table; this is rather higher than it would have been had the tables themselves afforded the needful data for re-calculation.

PERCENTAGE OF LOSS ON THE VOYAGE.
OCT., 1899, TO JUNE, 1902.

	Horses with Units and Remounts.	Mules.
United Kingdom	6.04	—
Australasia	3.83	—
Canada	3.22	—
United States	2.48	2.00
Austria	1.62	—
Argentina	.64	—
Spain	—	3.06
Italy	—	.39

The number of animals on which this information is based is:—

Horses 307,400 Mules 103,760

In the following table, extracted from Cd. 963, the percentage of loss at sea of Remount horses and mules from different countries is shown for the first two years of the war. It will be observed that this table does not include horses with troops.

PERCENTAGE OF REMOUNT HORSES AND MULES LOST ON VOYAGE, 1ST SEPT., 1899, TO 31ST DEC., 1901.

	Horses.	Mules.
United Kingdom	6.34	—
Canada	4.05	—
United States	3.21	2.68
Australia	3.16	—
Austria	2.07	—
India	1.96	.2
Argentina	.74	—
Spain	—	2.71
Italy	—	.54

The number of animals on which this table is based is:—

Horses 206,063 Mules 91,769.

[A good example of discrepancy in official tables is afforded by the figures for mules from Italy and Spain, which, in both of the above tables, should have agreed. In the first table, 7003 mules are shown as purchased in Italy, and 15,231 in Spain. In the second table, 5102 mules appear as purchased in Italy, and 18,543 in Spain, the purchasing period in each table being identical. The first table is the more accurate.]

It has been generally believed that a great deal of the loss at sea was due to the horses being carried from high and cold latitudes to hot southern latitudes, and that where no such seasonal differences occurred the resulting loss was small, as, for example, in the case of the animals shipped from the Argentine. To investigate this point we shall group the above tables into countries north and south of the Equator.

NORTH OF THE EQUATOR.

Horses: *	Death Rate.	
United Kingdom	6.04	6.34
Canada	3.22	4.05
United States	2.48	3.21
Austria	1.62	2·07

SOUTH OF THE EQUATOR.

Horses:	Death Rate.	
Australasia	3.83	3.16
Argentina	.64	.74

The supposed advantage of a ship not having to cross the Equator is not borne out by this table. The losses from Australia may be taken as about equal to the losses from Canada; while those from the United States, and certainly those from the Mediterranean, are less than the Australasian rate. The small Argentine loss may be explained by the fact that the trade did not last long, and the large majority of the ships ran during the most favourable time of the year for a good passage.† Further, it was only a short journey. A long and tempestuous passage, such as is frequent in Australasian waters, or those of the United Kingdom, are the two chief enemies of horses at sea.

The United Kingdom stands at the head of all countries in affording the highest loss on board ship; in this case the figures represent the actual loss at sea, for they are not vitiated by being burdened by the loss prior to embarkation. Nowhere, perhaps, was greater care shown in the selection and fitting of ships, or in inspection prior to embarkation, yet the results were bad. Among groups for broken periods—which we have hitherto avoided referring to—the results are even worse than the mean table presents; for example: among 2300 remount horses despatched in the winter months of 1899, the loss was 7.45%, and among 26,860 remounts which embarked in 1901, the loss was as high as 7.95%.‡ In connection with this, two causes are very evident, *i.e.*, the character of the weather around our islands, and the unfortunate practice which prevailed of the same vessel touching at two or three ports in the Kingdom for her complement of horses before starting on her voyage. This was an important contributing cause. We shall quote authoritative evidence on this point. Mr. S. J. Graff Assistant Director of Transports at the Admiralty, in his evidence before the C. of E. Rem., *Q.* 6144, made the following statement:—

"In the case of five ships which have carried horses, both from England and Fiume, under precisely similar

* No mules were purchased oversea south of the Equator.

† The route Buenos Ayres to Cape Town is in the neighbourhood of the parallel of 40° S., which will take the ship in the region of permanent westerly winds with a moderate sea. The journey is regarded as a fine weather voyage, in which the wind and sea are astern.

‡ See Cd. 963.

arrangements as to fittings, etc., it will be seen [from tables he handed in] that while the average loss from the United Kingdom was 9.23%, the losses in the same ships, when carrying horses from Fiume, were .97%. The conclusion seems to me inevitable that the fault does not lie with the ships, but must be sought in other causes, and I venture to suggest that the practice of making every ship embark horses at three United Kingdom ports [London, Southampton and Queenstown], whereby the voyage is prolonged four days in its most trying part, must have something to do with the adverse results."

We entirely agree with the conclusions of the Assistant Director of Transports at the Admiralty, not only on account of the loss of time and additional bad weather, but, chiefly, the air stagnation which occurs the moment a vessel ceases to move through the water. Every hour that a ship, with horses on board, is not on the move is a serious matter, as the ventilation is at a standstill. The influences of the time of year on embarkation in this country are shown by a table put in by Mr. Graff—"B," p. 210, C. of E. Rem., prepared for the year 1901. The horses embarked in the United Kingdom during the first quarter gave a death rate at sea of 8.77%. During the Midsummer quarter the rate rose to 10.23%; during the Michaelmas quarter it was 7.22%, and the Christmas quarter 8.98%. It is true that an equal number of animals were not embarked each quarter, but for the first three quarters they were near enough for comparison. The Midsummer quarter comes out the worst, so that the effect of snow, rain, or cold wind, at date of embarkation, is not evident. We must look to the delay in getting to sea as one of the chief, if not *the* chief, causes of the higher death rate among animals shipped from this country. It is equally apparent in those troop ships which, through not being ready before the horses arrived, had to complete their fittings after the animals were on board, during which time, from personal experience, we can vouch for sickness having broken out in the few hours which elapsed before the ship was able to leave port.

The death-rate at sea was so alarming that greater inducements were offered to secure more efficient veterinary charge, by offering better remuneration; not only was there to be a fixed fee for the voyage, but a sliding scale of bonus per head depending upon the number of animals landed in good condition.*

These improved terms did not become operative until September, 1901, but they led to, or were associated with, a marked diminution of loss in the North American passage, as may be seen in the following table:—

	New Orleans. Horses embarked.	Percentage lost.
Apr., 1900—Mar., 1901	36,000	4·67
,, 1901 ,, 1902	62,400	2·34*
,, 1902—June, 1902	10,000	1·55

	New Orleans. Mules embarked.	Percentage lost.
Apr., 1900—Mar., 1901	33,900	2·99
,, 1901 ,, 1902	25,400	1·08*
,, 1902—June, 1902	3,700	·70

There is no evidence of the effect of improved remuneration in the embarkation from the United Kingdom, excepting during the brief period April to June, 1902, as may be seen from the following table:—†

	United Kingdom. Horses embarked.	Percentage lost.
Apr., 1900—Mar., 1901	19,900	5·52
,, 1901 ,, 1902	32,000	7·48
,, 1902—June, 1902	6,600	3·60

There can be no doubt that in all cases the whole of the animals proceeding on any given vessel should be embarked at one port and immediately sent to sea.

The mean death rate of 2·67% for mules at sea is higher than one would have expected, for they are more placid and better sailors than the horse. The highest death-rate, furnished by the United States in 1899 (4·11%), is now well known to have been due to overcrowding. The mules shipped from Spain in 1900 also did badly (3·34%); how far that was due to the alleged maltreatment they received before embarkation‡ and how much to over-

* The terms were £50 for the voyage, with the usual first class passage back, and out-of-pocket expenses; there was also detention allowances in Africa while waiting for a ship. The sliding scale of bonus was three shillings per head landed, for a voyage mortality under 2½%; a two shilling bonus where the death rate was under 5%; a shilling bonus with a loss less than 7%; and no bonus if the loss was 7% and over.

* From a return on p. 319, C. of E. Rem., the improvement in the death rate dates from May, 1901, four months before the extra remuneration came into force,

† It is not permissible to compare a three months' period with a twelve months', but we can compare it with the quarterly rate given in the Graff tables above, for the corresponding period of the previous year, and the improvement is there very marked—3.6% as against 10.23%.

‡ The alleged neglect of the Spanish mules awaiting embarkation at Gibraltar was brought to the notice of the Remount Authorities in London, and the Remount Officers in Spain, by Mr. H. Sessions, F.R.C.V.S., who was sent to Gibraltar to mallein the mules before embarkation. His correspondence was produced before the Court of Enquiry, and we extract portions of it from the examination of one of the witnesses. All his letters were addressed to London, and the one in *Q.* 3370 also to the Remount Officer at Madrid.

Q. 3196. "I found when I came here [2nd April] a state of perfect chaos, the most elementary conditions of animal hygiene neglected, the animals waiting for the ships unable to lie down, their rations erratic and extraordinary, picking up bran mashes on wet days out of open air gutters. . . ."

Q. 3320. 16th April. "I have had all the mules lying down this week. They seemed very grateful for it, and took full advantage of the rest. Previously all mules through here have had to stand all the time. I have also got them fed three times a day instead of twice, and some rough mangers are being put up . . . . . The 88 that came in to-day were going to be tied up to ropes in the open and let feed off the ground. It is very wet and cold, and some

crowding and other causes, cannot in the absence of complete evidence be stated. Fortunately, however, we are not left entirely ignorant, as two ships carrying mules from Spain are specially included in a return shown in Appendix C, p. 329, C. of E. Rem. Each vessel lost over 18% of her animals, from influenza in one case, bad weather and the giving way of ship's fittings in the other. Another ship was detained for three days in Gibraltar Bay "under a roasting sun" waiting for wholesome instead of "filthy brackish" water, and more forage as she had an insufficient supply on board for her animals. See C. of E. Rem., *Q.* 3272. It is not surprising to learn from the table on p. 320, C. of E. Rem., that she lost 50 animals, or 5%. In the same table it will be seen that two other vessels from Spain lost 6%, one 5%, and two others 4% of their animals, though unfortunately the causes are not stated. The Spanish mule is not a bad sailor. Three vessels which left Spain in 1899 lost .14, .36 and 1.77 of its mules respectively, while a fourth, carrying 2249 mules, the largest number of animals on any one vessel during the war, reached Cape Town with a loss of .44%.

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they had out were in a bad mess, so I protested and got them under cover."

Q. 3304. 18th April. "I have been in a state of constant and friendly war with many officers, as I think the way the mules are treated is most inhuman and scandalous. After their long train journey, I found this morning that they were tied up so that they could not lie down, although with care they might all have had room to do so. There are another lot of mangers up, enough for a couple of hundred more mules. This will be better than their hunting in the mud for their barley." [It was a two or three days' journey by rail to Gibraltar, during which time the animals were neither watered nor fed.]

Q. 3305. 19th April. "I have tried to get better arrangements made to meet the mules here [San Roque, 7 or 8 miles from Gibraltar], and not to allow them to be left in the train for 12 or 24 hours after arrival."

Q. 3308. 27th April. "You will be glad to hear that the last lot of mules from Madrid were safely stabled by 6 o'clock on Wednesday in very fair condition, instead of being left in the trucks until Thursday, and unfed and unwatered until the middle of the day. . . . ."

Q. 3315, 3370. 1st May. "I have very much worried Colonel ——, and others." "I got Colonel —— on Saturday, and the Governor on Monday, to come and see for themselves *the lack of accommodation and muddle* in which the mules are. Now orders are out for more room, more mangers, more attention, and I am trying to get all the animals a few days' good food and rest before embarkation, and then to work some more into better stables."

Q. 3317. 6th May. "Only last week I found that for five days the mules had nothing but bran and straw, and as many were out in the open eating out of 'gutters,' a good deal of the little nourishment they ought to get went down the drains. I brought Colonel —— down to see it. I was told that the bran was given by orders from the War Office: but I hunted up the Regulation and found it had been misinterpreted. . . . ."

Q. 3318. 16th May. "I am glad Colonel Maude came down here, as, about a week ago, I had written to Colonel —— a rather strong letter, as I could not get him to finish some work he had promised to get done, and I had asked him to put it before the Governor. I think Colonel Maude thought I was 'right.'"

It is only fair to say that the statements made in the correspondence quoted in the footnote were practically denied, and it is unfortunate that Mr. Sessions was not called as a witness by the Court.

The Court, in paragraph 47 of their Report, deal with the care of Spanish mules in 1900 as follows:—

"Letters were produced showing that a civil veterinary surgeon who was sent from England to Gibraltar to test the mules for glanders, made adverse reports to Colonel —— at Madrid regarding the want of accommodation and the inadequate arrangements at that place [Gibraltar], but that officer did not communicate these reports either to the Inspector-General of Remounts at the War Office, or to the Chief Staff Officer at Gibraltar."

Nevertheless, the correspondence quoted above shows that, notwithstanding Col. —— action, the Remount Authorities in London, and the Military Authorities at Gibraltar, were acquainted with the case, and that the Governor saw the mules, see *Q.* 3315, 3370. The Governor of Gibraltar at this time was subsequently the President of the Court of Enquiry Remounts, and had that portion of Mr. Sessions' statement which referred to the Governor's visit been incorrect, he could hardly have refrained from so saying.

The opinion of the Court is contained in para. 170 of their Report:

"As to the arrangements made at Gibraltar for the accommodation of mules, the evidence is somewhat conflicting, but although grounds for complaint probably did exist, especially when large numbers of mules had to be detained there for several days, the Court considers that such causes of complaint as were brought to the notice of the Authorities, were remedied as far as local conditions made it possible."

In connection with this opinion it is important to bear in mind that the complaints were made by a civil veterinary surgeon against the military authorities, and that, but for him, nothing would have been heard of them. His notes were made at the time, and there is a realism about them only too familiar to those who have seen the care given to animals on service. Though in para. 160 the Court states Colonel —— did not communicate the Veterinary Surgeon's reports to the Authorities at Gibraltar, they admit in para. 170 that complaints were brought to the notice of the Gibraltar staff, and were as far as possible remedied. Mr. Sessions could have been called as a witness if the evidence had seriously been regarded as conflicting.

Mr. Sessions could hardly know that his procedure in writing to London, to the people who employed him, was irregular from a military point of view, and that all complaints should have been made in writing to the Authorities in Gibraltar, but this technical fault was due to his ignorance of official routine, and ought not in our opinion to have carried any weight in the interests of a public inquiry.

The Gibraltar episode is instructive; it furnishes us with an example of a Civil Veterinary Surgeon

endeavouring, without a knowledge of Army routine, to bring the neglect of animals to the notice of the Authorities. He had no status or position; he was sent to Gibraltar to mallein mules, and not to find fault with the conditions under which they were living prior to embarkation. The mouthpiece for such official representation was at Madrid, 400 miles away, and *via* Madrid it must come to the local authorities at the Fortress, if it is to be regarded as official. Mr. Sessions, with no knowledge of official circumlocution, attempted on the grounds of humanity and efficiency, to improve the condition under which the mules collecting at Gibraltar were living. In the first instance he wrote to the War Office, to the people who sent him out. He begins his letter, which is published in full in C. of E. Rem., *Q.*3041, by saying that he "took the liberty" of preventing a glandered mule being embarked, and that it was due to the courtesy of the embarking officer that his wishes in this respect were observed. He states that he had no *locus standi* or authority to act, and desired that instructions should be sent to Gibraltar to have him recognised in the matter of the well-being and care of the mules. He even asked the War Office for authority to spend the needful money in getting the animals shod. He begs that he may be informed whether "the officer with the boat" [Military Conducting Officer?] is the final authority as to whether certain mules should be accepted or rejected at embarkation, for as matters stand, he says, he has no position and cannot speak with authority.

In one of his last letters from Gibraltar, where he was being relieved by another civil veterinary surgeon, he asks the War Office that the powers delegated to him [to do the best he could for the mules, to requistion whatever was wanted, and to pay for anything needful] should be transferred to his successor, and concludes by saying that unless the latter receives strong support, "official routine will prevent his doing much for the mules, and they badly require daily attention."

His powers were transferred to his successor, which is evidence, if any were required, that his representations were necessary. He increased efficiency, he saved unnecessary suffering, he took the initiative, he "worried" the local authorities until attention had to be paid to the representations of a man who was not in accredited veterinary charge, but, nevertheless, not one word of commendation escapes the Court of Enquiry Remounts for the measures he adopted, or for the initiative he showed.* This is the more to be regretted when one remembers the severity of their judgment in the case of those foreign Transport Veterinary Surgeons whose chief cause of failure, as we have seen, was due to want of initiative and adherence to a bad system. We have little doubt that had Mr. Sessions, in the same way as the foreign Veterinarians on the Transports, accepted matters as he found them, he would have received the blame for the condition of the mules at Gibraltar, and the subsequent losses.

Mr. Sessions is unfortunately dead, but his correspondence, published in the Court of Enquiry Remounts, shows the remarkable efforts he made to bring his professional knowledge to bear in the interests of the public. We consider that these services should have received the recognition of the Court in their subsequent report, in which, it is observed, he is not even referred to by name.

In the Court of Enquiry Remounts is a table (Appendix C, p. 329), showing the ships with horses and mules where a death rate exceeding 10% occurred; the table is up to 31st December, 1901.

Four vessels were wrecked or stranded, in two cases losing nearly the whole of the horses. Six vessels sustained heavy loss through bad weather, in three instances the fittings giving way. On eleven vessels the excessive mortality was due to disease: influenza, pneumonia, strangles, mange and glanders; on four vessels the mortality was due to defective ventilation, heat apoplexy and suffocation; one ship alone losing 24% of her horses from this cause. In several instances the cause of the loss is not given. It will be borne in mind that the above list is only for vessels with over 10% loss; this excludes many where the mortality was nevertheless considerable.

Respecting bad weather and defective fittings, the typical case is the "Rapidan," which left Liverpool with troops and horses in the early days of the war. The Veterinary Officer (Captain Blenkinsop) complained about the flimsy nature of part of the fittings before the vessel sailed, but the Naval Authorities decided she must proceed.* It is doubtful whether they attached any importance to the objections which, fortunately, were given in writing.

The "Rapidan" left Liverpool on 1st November, 1899, with 484 horses on board. Heavy weather was encountered on the 3rd, and at the same time a fire broke out in the engine room. The engines had to be slowed down and the vessel lay rolling in the trough of the sea. The horses could not obtain a proper foothold, for the battens were too far apart, further, the whole of the concrete surface of the deck was not covered by a wooden floor, and on this the feet could get no grip. The horses slipped up or fell, either forcing the parting bars out of the weak slot in which they were placed, (see pp, 253, 254), or lifting them out of the groove in their efforts to regain their feet. The parting bars now lay as loose planks under the horses' feet and between their legs, the floor battens, already imperfect, were rendered useless, and with every roll the animals either fell or were shot forward against the breast bar. [Some were subsequently found wedged between the stanchions, which had to be sawn away to liberate them]. The strain on the

* The Court commended or spoke favourably of individuals in the following paragraphs of their Report:—59, 95, 130, 155, 161, 164, 219, 237, 238, 240, so there was a precedent.

* The parts to which the greatest exception was taken, were the *nailed* on weak fillets which formed the slots into which the parting boards dropped.

IV. Pack Transport Crossing Spruit.

This photograph is a good object lesson. Note the massive chest on the nearest mule; there is no such pattern in the service, it has evidently been removed from a Boer farm, and when empty is almost a mule load in itself. The rear pack-mule is carrying a service load on the off and an unauthorised load on the near side. The weight of the latter has pulled the saddle over against the withers. The whole load has also worked back, and the near side chest must be wearing a hole in the hip. These are points which would be at once noticed by a good transport officer.

Photo by Mr F. B. Gresham.

V. Branding Oxen.

VI. Dipping Bath for the Treatment of Mange.

The animals walk along a narrow passage in which they cannot possibly turn; the pressure from behind keeps all in front on the move. There is a sudden drop of six feet just in front of where the leading animal is putting down the off fore, and the next step will find him over his head in the water. There are several yards to be covered by swimming before the landing place is reached.

PLATE III.

I. Railway Transport.

Illustrates the difficulties of watering and feeding horses in trucks. The photograph shows a column being moved by rail.

Taken by Mr. F. B. Gresham, of Newark, late C.V.S.

II. Stuck in a Drift.

An example of a moderate road and a heavy load. Double spans of oxen are in use.

III. Mule Transport climbing the bank of a Spruit.

An attempt has been made to improve the road, and the mules may just be seen on the other side of the working party.

Taken by Mr. F. B. Gresham.

PLATE III.

stanchions was now so great that they "started," and the remaining parting bars then fell out. The projecting French nails used for the fillets produced severe injury. Some horses were kicked to death by their neighbours, others had their necks broken by the halter, or were suffocated by the nose-band pressing on the nostrils as they lay suspended by the head ropes, or had their lives battered out of them. It was impossible to render much assistance; most of the men were sick, while the nails in the boots of those who could get about, gave no grip on the iron-sheathed decks.

As the result of this disaster 166 horses were killed outright or had to be destroyed, over 34 %, and the ship, being once more got under steam, put back to Liverpool with her terribly battered animals. There were wounds on the survivors extending from shoulder to knee, and from hip to foot, and 109 of the worst injured were there put ashore.

The fittings were now strengthened; the slots for the parting bars were made deeper, screws being employed for the fillets instead of nails; the deck under the horses' feet was covered, and a central batten added. On the second voyage they again had bad weather, but no further mishap.

The "Rapidan" was frequently referred to in the C. of E. Rem., and the evidence of the Naval expert (*Q*, 5401) was to the effect that during the gale a fire broke out in the engine room, and the engines were stopped; the ship not being under control *opened out* in the trough of the sea, and, as a result, the parting boards of something like 100 horses dropped out, the uprights and everything else remaining. We can offer no expert opinion on the ability of a ship to increase its width without the external plates opening out and the vessel going to the bottom; but it is certain that in the case of the "Rapidan" her parting boards fell out from the causes we have named.* It was an accident that never ought to have happened, and had the veterinary objections been given attention to by the Admiralty Officials, there seems no reason why the fittings in a vessel lying in the trough of the sea should give way. The work of fitting was done in a hurry, and the ship was not completed even at the time the horses were filing on board; workmen were still on the vessel when she dropped down the Mersey.

Too much is left to the discretion of Naval Officers, † excellent men, but necessarily without much experience of horses, and none of the violence and strength exhibited by animals in a state of panic. There should always be an experienced Veterinary Officer at the port of embarkation as part of the Transport Staff.* An equally important matter in horse ships is proper ballasting. The "Rapidan," and many others, were light and stood far too high out of the water, so that in a cross sea they rolled badly.

In the matter of outbreaks of disease, it is evident that the most rigid inspection before embarkation will not detect a case of strangles in its incubative period, nor can the subject of pneumonia be anticipated. Among remount horses influenza, strangles and pneumonia were the most common causes of illness, and with mature horses a disease simulating influenza, together with pneumonia, were the chief causes of loss.

In the following table the cause of death occurring among many thousands of animals shipped is given separately for the United Kingdom and the United States:—

	United Kingdom. *Deaths* 2028.† Per cent. to total deaths.	United States. *Deaths* 1245. Per cent. to total deaths.
Pneumonia	60 %	60 %
Strangles	5	5
Gastro-Enteritis	3.2	7
Influenza	2.9	4.5
Apoplexy	2.5	7
Purpura	1.7	8
Septicæmia	1.2	?
Glanders and Farcy	.29	5
Various	25.00	?

It is curious to observe that from both countries, among the fatal cases, the deaths from pneumonia and strangles were identical. Pneumonia furnished by far the largest percentage of deaths.

Ship pneumonia is, as we have seen, the most common cause of death, and its study ought to be taken up. It does not differ materially from the same affection seen ashore, excepting its extreme rapidity and fatal character. In all cases examined post mortem by the writer the lungs were found in

* Since the above was written, I have been able to obtain expert opinion on the question of the sides of a vessel opening out, and it is to the effect that it is neither possible nor imaginable without destruction of the ship. There is considerable longitudinal strain, which leads to perceptible movement, but any lateral opening could only be due to elastic strain in the beams, and the want of perfection in rivetted joints; it would be less than the eighth of an inch. This ship would have had to open three inches laterally to allow the parting boards on both sides to drop out.

In December, 1902, when the Expedition was being sent to Somaliland, the diet scale for animals shipped at Cape Town was framed as follows by the Naval Transport Authority, no reference being made to the Veterinary Service:—

Each horse daily
1 to 2 pints of vinegar,
¼ to 1 lb. of salt!
½ to 1 lb. of nitre!
4 lbs. of oats,
5½ lbs. of linseed.

In December, 1902, the Naval Transport Department had been shipping horses continuously for three years!

* A ship was passed by the Admiralty Transport Officer at Liverpool for 740 horses which could only carry 700. He had included the hatchways as deck space, so that the horses below would have been hermetically sealed. Forty-three horses subsequently died on this ship from pneumonia. C. of E. Rem., *Q*. 6127.

† These deaths occurred among 30,900 horses. The numbers furnishing the deaths in the United States table are unknown, but probably 50,000, and include both horses and mules.

a necrotic condition. Some horses are attacked a few hours after starting, but, as a rule, each day produces its crop of fresh infections. On board a ship is a good place to study the question of contagiousness, but in our opinion it was not evident. It seems impossible to escape from the conclusion that foul and stagnant air are the exciting causes.

Overcrowding is best illustrated by a ship, the "Manchester City" (see footnote, p. 253) which left New Orleans in November, 1899, with 2090 mules on board. It took three days to load the ship. Abnormally hot weather was met with in the Caribbean Sea; there was a stay at St. Lucia of 47 hours during intense heat and no air movement; after the ship had been 35 or 36 days at sea it arrived in South Africa, 187 mules having died. The spare places in this vessel were taken up with hay and fodder; the ship's ventilation was also obstructed by forage, and the animals closely packed.* The weather was unusually hot, a temperature as high as 115° being registered between decks, and it rarely fell below 100° to 98° while passing through the hot belt. On 6th day after leaving eleven animals died, up to this time the deaths had been four or five a day. There were eleven deaths the next day; on the 8th day out the vessel had to lay-to for repairs, and eighteen animals died. She anchored at St. Lucia for 48 hours, and in those few hours 51 mules died. The day after leaving St. Lucia she lost 23, and from that time onward the mortality decreased as the weather became cooler, and the cubic space resulting from deaths and consumption of forage increased. The atmosphere below in which these animals lived was so foul, that the men employed looking after them would not work more than half-an-hour before coming on deck for air. The absolute blackness, excepting for a few electric lights, intensified the evil. At St. Lucia there was neither air nor water movement, so that even the dead animals thrown overboard had to be towed away. This created considerable delay in disposing of the dead still on the ship, which, in such a temperature rapidly became putrid, even their hoofs came off before they could be thrown overboard! Such a condition assists in realising the state of the atmosphere between decks. This vessel was a veritable "Black Hole," her losses were 7.96%. Another mule ship sailing from the same port a few days later than the "Manchester City"—the "Anselma de Larrinaga"—was also overcrowded, and lost 10.57% of her mules from pneumonia, suffocation, or heat apoplexy.

Bad weather, exclusive of pneumonia or the fittings giving way, may kill horses from exhaustion. It must be remembered that during the time the vessel is rolling the animals get neither rest nor sleep. A vessel rarely pitches to the same degree that she rolls, and, moreover, the movement is slower excepting at the ends of the vessel. It is the rolling which works the evil, and to estimate what it means in the way of muscular and nervous strain it is only necessary to stand in the alley-way at the end of the horse deck and watch the pendulum-like movement of the body. As the ship rolls fifty heads looking towards the roll disappear at the same second of time, whilst the heads of the fifty neighbours opposite, who are looking away from the roll, appear with the same suddenness and precision. The roll in the opposite direction reverses the movement. The feet are the fixed points on which this swaying to and fro occurs. It is not difficult to understand the mortality which took place on the "Monterey" and "Rippingham Grange," (pp. 258, 259), which were kept for two and six days respectively, rolling outside Durban Harbour, after a long sea voyage.

The cerebral cases, or so called "ship-staggers," are most puzzling. Some happen in bad weather, but they may also occur in harbour, when a high external temperature is associated with absence of air movement. Our knowledge of these cases is very imperfect. Some are, no doubt, reflex, especially those occurring in bad weather, and are due to inability to vomit; others are apoplectic in nature. In any case, a cold douche and fresh air work wonders.

A properly fitted dispensary and a centrally situated hospital are matters of great moment when much sickness prevails. The hospital should be isolated, placed midships, and on the main, or even upper deck. It must be accessible from all parts of the ship. A rule should be made to treat only the simplest cases in quarters. Horses can only be conveniently moved from one point of the ship to another when good large hatchways exist. A small hatchway means a very steep "brow," up which a sick case may be too feeble to climb.

It is easier to formulate improved regulations for long sea voyages than to have them given effect to. More air space is req red, that means fewer animals should be carried. We sacrifice safety to numbers. It is no use carrying 600 animals if 50 are to die on the voyage; far better carry 550, and devote the space gained to improving the accommodation and comfort of the others. The air between decks must, by means of fans, be kept in a state of movement from the moment the horses enter the vessel until they leave it. The introduction of fresh air by windsails must not be wholly depended upon for air movement. A wide alley-way, along which exercise can be readily carried out, is absolutely essential; good fittings, more liberal feeding, absolute cleanliness of horse decks, and a proper system of drainage for the decks below water level, are all indicated.

Fifteen per cent. of the horses should be allowed to lie down daily; what this would mean in a long voyage is incalculable. The regulation allowance

* A Clause in the Agreement was that the shipowners had the right to carry these animals as their own property irrespective of any regulations. They had fitted it up to carry 2349 animals, the Admiralty understood it could carry 2500, but only 2090 were permitted by the Remount Officer to embark.

of spare stalls is five per cent., but it does not contemplate these being turned into two boxes and bedded down with matting; nevertheless, in a month's voyage 60 % of the animals would in this way have secured one day's rest. Eight stalls for every seven animals would give each horse a rest once a week, and if that extra stall costs £15 it is well worth the money.

Prejudice dies hard. The old idea was that the hind shoes should be removed from horses before going aboard; the Veterinary Service before the war pointed out the disastrous results of such practice, and generally speaking its advice was followed.* The opposite course was pursued with the usual results; the feet were broken away, and the animals useless on landing until the feet had grown sufficiently to carry nails. Horses, however, should not be embarked wearing shoes with calkings. Regular attention to the feet on board is a matter of supreme importance. A large number of horses cannot be embarked fully shod up; there must be many that require attention, and a daily proportion should come under the hands of the farrier for this purpose. The cold fitting of new shoes is not a simple matter, unless they be of the smallest sizes; in the majority of cases a "remove" suffices. Tools, nails and shoes of suitable sizes should be stored on board where they can easily be got at, and not put at the bottom of the vessel.

Mats may be employed for kickers, and there are none to equal the ordinary household article which can readily be suspended at the proper height.

Owing to the close proximity of horses on board ship, contageous and infectious diseases spread with great rapidity. Veterinary inspection at the time of embarkation cannot be too thorough, and all doubtful cases should be ruthlessly rejected.

The use of disinfectants on board ship is minimized by daily cleanliness; all those containing lime are objectionable owing to their action on the horn of the foot. One of the chief proprietary solutions served out during the war was found to be decomposed by sea water on dilution, and in consequence worthless.

The use of drugs on board should be prohibited, excepting under veterinary supervision. They are never needed on the wholesale lines that the laity wish for. Vinegar is worthless, nitre unnecessary, sulphate of magnesia useful under veterinary control. Nothing can take the place of sound management, the keynote of which is the inspection of every horse by the responsible authorities not less than three times a day, which includes an early morning and night visit.

The landing of horses on the almost unbroken coast-line of South Africa was a difficult problem. Cape Town possessed a harbour with limited accommodation; Port Elizabeth and East London were practically open roadsteads, and Durban, a port with a difficult bar. At Port Elizabeth the horses had to be slung over the side into lighters below, and tugged ashore. Remarkably little injury occurred as the result of these rough operations, once the system of employing canvas instead of rope slings was introduced, and the tying up of horses on the lighter adopted; prior to this they were loose, and naturally damaged each other.

Horses, after being a month at sea, land with big legs, tender feet, tired and weary. Their first essential is a rest, and their next, walking exercise. During the war, especially the earlier months, they usually hobbled direct from the boat to the train, and the inconvenience and suffering of a long land journey were added to those already experienced.

RAILWAY TRANSPORT.

The railways of South Africa are narrow gauge, 3 ft. 6 in., and single lines. The number of cattle trucks available was quite insufficient for the transport of the troops, and was supplemented by the ordinary open goods and coal trucks whose low freeboard was raised by a railing. The trucks in the Cape are short, but those in Natal are long and of iron, especially the coal trucks, which, in that colony, were almost exclusively used as horse trucks. In no pattern of truck did facilities exist for watering and feeding during the journey; with the covered-in cattle trucks it was impossible to do anything without taking the animals out; this was out of the question where speed was everything, and a single line congested. We are now mainly referring to the long journeys undertaken by troops just landed at the beginning of the campaign, who were being rushed up to the front as fast as trains could be obtained; it also applies to the train loads of Remounts being sent up at this time to replace casualties. In fact, it may be said that until about April, 1900, no system could be established for properly feeding and watering on route.

The animals were placed *across* the truck and tied with their heads to the side. The narrow trucks were too small for big horses, which were badly rubbed on the tail and quarters: on curves the animals lost their foot hold, and on inclines, especially those on the Natal railway, the mass in the long trucks gravitated towards the end and exercised extraordinary pressure on the lowest horses.* Iron shoes on iron floors give no foot hold, and the sand used on the floors gravitated with the horses and played over the iron surface. The injuries occurring between Durban and Mooi River during the concentration on Colenso numbered hundreds, and many were fatal. They were not so numerous in Cape Colony, for the table land is fairly level, but, nevertheless, they represented a considerable degree of inefficiency. No tying up could enable horses to maintain their position; even if the head ropes held,

* Nevertheless, the Assistant Inspector of Remounts S.A. states in his official report:—"Shoes should be taken off before embarkation: feet take less harm from expansion without shoes . . . . . it would be far better to ship all animals unshod, and obviate possible injury on shipboard and in landing." Parliamentary Paper, Cd. 963, p. 17.

* See p. 87 for a fuller account.

the animals frequently fell, and, once down, could not rise. The Cape Government Railway never tie horses up in their trucks, and after a time we followed local practice with far better results. The animals now arranged themselves as far as possible parallel to the line of rail instead of across it, and were thus in a far sounder position to resist sharp curves and shocks in shunting.

It was urged by one witness examined before the Royal Commission (*Q.*13073), that the trucks used in South Africa should have been arranged on the principle employed for animal transport in India, *i.e.*, the horses placed parallel to the rails in two rows facing inwards, a bar across each batch, to which the heads are secured, and between the rows of heads a space for attendants and forage. By such a system horses can be watered and fed for days without detraining, and men are at hand to render assistance if any animal is in difficulties. This method leads to some loss of stowage-room, but that is more than compensated for by the better condition in which the animals travel, and attention to their requirements. Towards the end of the war some trucks were arranged on this system. It is impossible to over-rate the advantage such a method would have proved during the campaign in the alleviation of animal suffering. Day after day, in the early part of the war, troop and remount trains travelled with no chance of watering and feeding effectively. The truck with a roof and a jumble of frightened animals defeated all attempts at watering and feeding from outside, and to go inside with a bucket was impracticable. The roofless truck offered some advantage in this respect, for men could clamber along the woodwork frame, imperfectly water a few, and put nose bags on those they could reach* (see Plate iii., Fig. 1). But watering by pails is slow and wasteful, and water was a valuable commodity that could only be obtained at long intervals, and in small quantities. With these trucks no other system was possible than that of detraining the whole of the animals and feeding them on the platform, a process out of all consideration with several trains on a single line, each waiting on the other, and urgency a matter of vital importance.

It was not until the first pressure of work was relaxed, with the advance from Bloemfontein, that it was possible to adopt some regular system with remount trains. Experience had shown that a party of men should accompany every train to assist horses in difficulties, and stopping places about 12 hours apart were arranged where the whole train load could be disembarked, watered and fed, by parties stationed at these roadside depots.

When the line through Natal became the main artery of Remount Supply a regular staging system was projected. The distance, Durban-Johannesburg, of 420 miles was divided into four stages; at each the animals were to be detrained and rested for 24 hours. This excellent system, under military pressure, was more honoured in the breach than in the observance, for four days could not be spared for getting animals to Johannesburg. It was carried out wherever possible. The Natal line probably furnished more injuries than that of the Cape, owing to the hilly nature of the country, and the long iron trucks. Horses must have a batten foot hold in a truck, as in a stall on board ship. An iron floor is a hopeless standing.

Projecting bolts were fruitful causes of injury, rough and careless shunting was a frequent source of accident, and steam whistles, sounding in close proximity to trucks, played their share in further upsetting frightened and nervous horses.

Innumerable representations were made by the Veterinary Service of the many injuries occurring in the train, and the military authorities were no less keen on reducing this source of horse wastage. The Railway Companies probably did their best under very trying circumstances, but it fell far short of what was necessary. One witness before the Court of Enquiry Remounts, a senior officer with many months' experience in the Remount Department, regarded the railway as one explanation of the great loss of horses (*Q.*3807). He said the horses were occasionally hung up for days, and were treated very much as if they were trucks of coal. Trucks were sometimes detached from the trains without those in charge being informed, and the animals left behind in a siding with no one to look after them. From personal knowledge, we have known water denied horses at a station, as the supply for the engines would have been seriously affected, or, at least, that was the view of the Civil Engineer in charge of the section of the line. Want of sufficient water and food, sometimes an entire absence of both for two or more days, with animals alternately under a blazing sun and cold penetrating dew, rendered it no matter for surprise that trains arrived at their destination with the horses looking empty and worn, and trucks containing dead and dying. Especially was this so with remount trains conveying animals which had passed directly from ship to truck.

Horses which fell in the truck were rarely able to rise without assistance, and many in this way were trampled to death, Particularly was this the case with the debilitated animals returning from the Front, who were found, from experience, to be bad travellers. They had no strength left in their limbs to maintain a foot hold; with every sudden curve in the line and every shock in shunting they fell, and the dead were taken out sometimes by dozens, when the train arrived at its destination. Hundreds upon hundreds* of these horses were destroyed at their destination, or before reaching it, as being unable to proceed further.

† Nose bags had to be left on until the next stopping place was reached; they were frequently lost, and if put on tightly to avoid this, the animal was partly asphyxiated through breathing foul, moist and heated air, for the canvas is impervious when wet.

* It would be quite safe to say thousands, for we have known between two and three hundred destroyed from one large consignment.

During the course of this History we have seen how frequently the line of rail was used for strategical purposes. In the De Wet raid of January, 1901, in nine days, 89 troop trains were despatched from Bloemfontein to various parts of Cape Colony bordering on the Orange River, and while this was occurring 27 trains were bringing Bruce Hamilton from Winburg to Bloemfontein: No wonder that, under this pressure of work, animals got very little attention even when travelling with troops. Loaded up at night, starting at dawn, rushed through while daylight lasted and the line safe, left little time for care and attention. McKenzie-Rew* tells us how, in the subsequent chase of De Wet back into the Free State, ten horses of the Warwick Mounted Infantry were placed in a hermetically closed truck [apparently the type used for carrying explosives] and when the door was subsequently opened they were all dead. The most ordinary care and intelligence would have saved the lives of these animals, at a time when every horse was required.

The most extensive strategical move by rail was that carried out between the 5th September and 11th October, 1901, when the troops were concentrating to repel Botha's invasion of Natal. No less than 32,836 animals were moved by rail. A derailed train caused the death of 25 horses and injured 30 others, but this was the only accident on a large scale. On the other hand, there was a considerable amount of suffering and inefficiency in other ways, for mange spread in a remarkable manner, due, of course, to the close contact in trucks.

When Bethune's column was sent to Zululand in July, 1901, the trucks containing the horses and men became detached, and the horses were left entirely to themselves, and many of the animals died from want of attention. †

The spread of disease through the agency of railway trucks was, doubtless, considerable. There was frequently no time nor appliances for cleaning them; their thorough disinfection in time of peace leaves much to be desired, in war, the pressure is too great and continuous. Nevertheless, the matter was not overlooked; the Railway authorities, both military and civil, did what was possible, and a marked improvement was evident in course of time. Administrative Veterinary Officers on the line had it as part of their duty to inspect trucks as opportunity offered, and make the needful representations. Labour was always a difficulty, and rolling stock cannot be kept idle at a time when every truck is required, and the flow up and down the line has to be equally maintained. Thorough disinfection is skilled work, this is frequently forgotten.

* "Records of Roughriders," 1907.

† C. of E. Rem., *Q.* 3813.

TRANSPORT IN THE FIELD.

It may be explained that the transport animals of an Army in the Field are invariably divided into three main groups. *The First Line Transport* is employed for ammunition and water carts, draught or pack mules for machine guns, and mules for technical equipment, such as signalling apparatus, Artillery, Engineer, Medical and Veterinary Stores. This transport is in the care of the regiments or units to which it is attached, and officers of the various branches concerned are responsible for its care and well being. With the mounted branches this offers no difficulty, but the bulk of an army is infantry, and the mules attached to each regiment or brigade are placed under the care of an officer who, probably, has never in his life had anything to do with animals. Under these circumstances the management is necessarily bad or defective. The strain on the first line of Transport is greater than on the others yet to be considered, as it has to keep up with the troops and accompany them in action.

The Second Line Transport consists of animals which drag the baggage of the troops and carry two or three days' supplies of food and forage. This transport is not under the management of regiments, but of specially trained transport officers of Army Service Corps Companies. It may consist of both mules and oxen. It follows behind the force, coming up with it towards the end of the day. Unlike the First Line, it does not leave the road or track, nor accompany the troops.

The Supply Column consists of mules or oxen, generally the latter, dragging along one or two days' supply of food for the whole Force. It marches behind the Second Line Transport. It is fed by a *Supply Park*, containing three days' rations for men and animals,* which works to and fro between the rear of the Army and the Advanced Base of Supplies.

The details of the Supplies carried in these various organizations vary according to circumstances, and do not concern us as long as the general principles involved in the employment of transport animals in the Field is understood. For instance, the waggons of the Supply Column are daily getting lighter until refilled; similarly the work of animals with the Supply Park, on their return journey with the empty waggons, is a relief which has to be taken into consideration in judging of the extra marching they perform. The First Line Transport, on the other hand, is always kept at full working strain, and animals showing the effect of this may advantageously be placed under lighter conditions in the Second Line. Mechanical traction will, in the future, revolutionize transport arrangements in the Field, but can scarcely be taken into account during the war in South Africa, where it proved disappointing.

* The number of days varies, depending on the operations. It was seven in the advance from Bloemfontein, but is generally three.

The above is an outline of the organization in South Africa with a large Force; there were modifications to meet the requirements of mobile columns.

It may be mentioned that a team of mules consists of ten animals in a four-wheeled waggon, the load being 3000 lb., and six animals in a two-wheeled vehicle, the load being 1500 lb.

MULE TRANSPORT.

The value of the mule as a transport animal, his powers of endurance, his spirit and willingness, have been abundantly testified to in these pages; they won for this splendid animal the admiration of the army. The type of mule we refer to is the small one; the large mule—which, like large horses, we insisted upon importing in the early days of the war,—was not a success; in fact, it may be stated as a general rule that the value of a mule for transport purposes is in inverse ratio to his height. I know of nothing in the way of an animal which, for real "grit," approaches the small mule.

The care of these animals left a great deal to be desired; the creation of an enormous Transport Service necessarily led to the employment of officers with no knowledge of the care and management of animals.* The few trained officers of Army Service Corps available for Transport Service were almost lost to view, and the management of mules in those Transport Companies where no Army Service Corps officer existed fell largely into the hands of civil conductors. The South African native is an excellent man with mules, but, like all of his class, requires constant supervision. His system of turning mules out to graze was to tie three or four together, and let them roam; the same system was followed when taken to water. It resulted in the strongest having his way, he moved on in grazing, dragging the others from the "bite" they had just found, or when he had finished watering he at once left the stream and the others had to follow. It took months of work to control this iniquitous system, and even at the end of the war it constantly had to be looked for and guarded against. Tying four mules together for grazing is a time-saving process when they have to be driven back to their camp, for the mule is difficult to manage when he has his freedom; but no such consideration should have been permitted to carry weight where the health and vigour of the animals were concerned. Knee-haltering adopted while grazing was a fruitful source of injury, owing to the raw hide used as a rope cutting the limb when carelessly applied. Losses from drowning by watering mules tied together in batches, or knee-haltered, were frequent, and the least reflection should have shown the danger of such a proceeding.† We have no hesitation in saying that the South African method of tying these animals together for grazing and watering purposes, was the chief cause of their rapid deterioration in the early stages of the war in Cape Colony, for a mule thrives on grazing on which a horse will starve.

The daily ration for mules was 5 lb. of mealies, or rather less than three-fourths of what they should have received. The ration should have been not less that 8 lb. daily. As a matter of fact we have repeatedly seen in these pages that they received no rations whatever during some military operations, and frequently only on a considerably curtailed scale. Insufficient food may be taken as the chief cause of mortality among these animals, for, though the question of "condition" arises, as in the case of the horses, it is not so pressing in the matter of the transport animal, with no weight on its back, moving at a steady pace on a track.

The expression "track" is intentionally employed: there are no roads across the veldt. The line followed depends on the season and the nature of the obstruction in front. The most severe part of the road is met with in the dry bed of a river or stream, with its heavy sand-approach and still heavier outlet. The fords have rocky bottoms, but are littered with obstacles in the form of rocks and boulders over which the wheels have to climb. In wet weather, or after rain, the difficulties are enormous. A great deal of suffering might have been averted at drifts and rivers had the principle of extra teams been employed as a regular routine, and not left until the single teams had become exhausted. The passage of a river with almost perpendicular banks means that these have to be prepared for transport, and the newly made track is yielding and heavy. Rivers and streams, wet or dry, were the cause of extraordinary strain on transport animals. In addition, in Natal, hills and mountains had to be climbed. In this respect, the earlier operations in Natal were far heavier than those in the Free State and Transvaal. The difficulties met with on the road have, from time to time, been described in the pages of this history.*

It is astonishing how well mules maintain their condition, even under adverse circumstances, where they receive reasonable care and attention.† We have elsewhere drawn attention to the absolute importance of the supervising eye of the officer in all matters connected with the care and management of animals. The transport officer's duties are never ending; he is required even more on the line of march than in bivouac. He must see that the pace is properly regulated and animal energy conserved. A steady regular pace throughout, never exceeding four miles an hour with cavalry, and three miles an hour with mixed troops, is fast enough for any military operations. That it

* At the termination of hostilities there were 40 Companies of Army Service Corps in the Field, with 300 Officers, three-fourths of whom were attached, that is to say, were not transport officers by training, together with 1640 white, and 35,800 native civilians.

† See also foot note p. 25.

* See pp. 32, 33, 75, 76, 86, 92, 95, 96, 100, 101, 102, 103, 105, 153, 155, 157, 170.

† In the Evidence taken by the Royal Commission on the War, General Rimington stated (*Q.* 12,682), he had a team of mules which went through the whole War,

is the pace which kills is an axiom which should ever be before the watchful transport officer. Trotting with loaded waggons is unpardonable. If interval is lost on the road through delays behind, the column in front should halt while it is made good. Up and down his column the Transport Officer should move throughout the march; in no other way can he check irregularities,—such as men riding on the waggons, the abuse of the whip by drivers, the neglect of the brake going down hill, and its removal the moment the point is passed where it is no longer required, the ungreased wheel, so fruitful a source of exhaustion, the chafing of harness,—all these can be seen at a glance, and controlled. To ride at the head of the column looking straight to his front is the last duty of the officer in charge; he might, indeed, be just as well miles away.

The fitness of transport mules depends entirely on the attention to details of this kind; every commander should be as well acquainted with them as the transport officer. In that way, unreasonable calls on the transport would not be made, and the necessary consideration shown for rest, watering and feeding, on the basis of two hours in every four. Those military operations where time cannot be spared to rest and feed the transport are few in number; it is the sacrifice of animals unnecessarily made, by ignorance of requirements, which causes the preventable loss on a campaign.* Everyone knows that without transport an army is tied to the ground on which it stands. During the War there were several Commanders whose interest in transport was deep and lasting, and their marches have been duly recorded in this History.

There is no animal which returns so much for so little attention as a mule; he has a marvellously economic digestive apparatus which converts the most unpromising looking material into bone and muscle, and it may be laid down as a rule, to which we know no exception, that if mules are in bad condition their management is defective, or unfair calls are being made upon their strength.

The total loss of mules in the war, see p. 226, was:—

Oct., 1899 to Dec., 1900	29,113
January to December, 1901	14,433
January to May, 1902	7,853
	51,399

Over 35% of the strength of mules was, as a mean, lost year by year, throughout the war.

The diseases affecting mules do not differ from those attacking horses, and will be considered later.

* The disgraceful overdriving of animals and overloading of vehicles formed the subject of several Army Orders, they have been reproduced at p. 144. Every endeavour was made by the Commander-in-Chief to inculcate humane treatment of animals and attention to their requirements. Even prizes were, as we have seen, offered for competition among native drivers, though they had to be withdrawn subsequently.

OX TRANSPORT.

The ox is the transport animal of South Africa, and its management and care are thoroughly understood by Transport Riders and natives generally. The Transport Rider, in the pre-railway days, was a person who undertook the general transport work of the Colonies with cattle and waggons, either his own property, or generally hired. He was, of course, a white man, and his object was to reach his destination with the least possible loss, and by the most direct possible route. Under his skilful management oxen were capable of rendering immense service. As a transport animal, where time is no object and roads are heavy, the ox has no equal. Obedient and willing, endowed with great philosophy, he hauls heavy waggons and immense loads over tracks from one end of a sub-continent to another.

The utilization of the transport of the country in which military operations are occurring is a fundamental principle, and it was known that the ox would be largely employed for all operations in South Africa. There is an immense difference between transport work in peace and that in war, but such differences do not lead to any change in the physiological conditions of the animal; these still remain immutable, and if they are neglected, either from military necessity or ignorance, the penalty is heavy. The difference between the management of the ox and that of the horse is as great as anything can well be, and, with few exceptions, all the military officers at the beginning of the campaign who were responsible for the care and management of this animal were ignorant of the question. Their care naturally fell to the Transport Rider, or Conductor, as he was termed in military organization, and the natives in charge.

No food whatever is carried for oxen; they live on the country, and for this purpose require time for grazing; after grazing they need time for rumination. All experience shows that oxen work badly during the heat of the day, and under peace conditions this time is devoted to grazing and rumination.

The best time for working oxen in draught is the early and latter part of the day, but it is obvious that, under military conditions, such a council of perfection may not be attainable. There is no time so bad for horses and men as in the dark, whereas oxen then do well.

Complete ignorance of the care and management of oxen was responsible for neglect of the most obvious measures for their welfare. For instance, a Commander knows that his animals require rest and time for grazing, and he knows that under military conditions they cannot be turned out to graze at night, Yet these matters appeared to carry very little weight with some, who were satisfied if they covered the allotted distance, apparently forgetting the penalty inflicted upon the oxen. There are periods in every march when a

general halt becomes necessary; there are delays at bad points in the road, drift or river, where waggons can only cross singly and with great delay. Miles of transport may thus be held up. A considerate Commander takes every opportunity for relieving his oxen, which would otherwise stand for hours under the yoke; nor does he deny them grazing if any can be obtained near to the track. In ordinary marches, "inspanning" should be delayed as long as possible, especially where there are miles of waggons, as several hours must elapse before the last sections are able to move off. The earlier sections should be given a start of all other vehicles, owing to the slower pace of oxen, which, under the most favourable conditions, should never be greater than 2½ miles an hour. In wet weather oxen travel badly, and are liable to become foot-sore. Some consideration must be extended to them under these conditions, or the inevitable will occur.

The various orders which were published by the Commander-in-Chief relative to the care of transport oxen have been quoted on p. 144. No effort was neglected by those in authority to inculcate the principles of humanity in their treatment. It was also pointed out that observance of the rules of marching and grazing should never be departed from excepting under real military necessity, nevertheless the mortality continued, and it became apparent that with oxen, as with horses, less care was taken of them in proportion to the ease with which casualties could be replaced.*

By attention to the principles of ox management, which are neither numerous nor difficult, and by following the skilled advice of those who all their lives have been mixed up with transport-cattle, a large proportion of the shocking loss of life which occurred in South Africa would have been prevented. It is the staff, as well as the rank and file of the Army, which requires educating in these matters.†

A loaded ox-waggon with a span of 16 oxen, will convey 4,500 lb. of dead weight, on heavy, springless vehicles, over the most unpromising tracks at a steady rate of 2½ miles an hour—the moment the animals are hustled they become distressed. Four hours inspan should be a maximum at a time, followed by two hours rest and grazing; and eight hours work a day, which, with obstacles and difficulties, will probably amount to fifteen miles, is a fair days' work. Few armies under ordinary conditions are expected to cover more ground than this.

THE VETERINARY ARRANGEMENTS FOR TRANSPORT SUPPLY AND LOOT CATTLE.

At the outbreak of war the transport oxen were engaged on the hired basis, the responsibilty for maintaining the numbers resting with the contractor. In his agreement were clauses giving compensation for certain diseases. These clauses in Natal and Cape Colony were not identical. Pleuro-pneumonia was compensated in Natal but not in the Cape. Red-water was compensated in the Cape if a contractor's animals were taken into a red-water district. Very early in the campaign the compensation clauses became a source of financial anxiety, and a veterinary officer was appointed Inspector of Oxen in the Cape (see p. 47), part of whose work was to enquire into these claims and as far as possible check irregularities. Another part of his duties consisted in dealing with outbreaks of diseases; the appointment was made on the representations of Colonel Rayment, Acting P.V.O., whose experience of war was considerable, and who knew the trouble which lay ahead among transport animals, especially cattle.* Major Sharp, A.V.D., was subsequently appointed Veterinary Inspector of Transport Oxen, and remained with this Department to the end of the war. The pages of this History give no notion of the amount of good work which this officer carried out.

The system of hired transport is a great convenience for a short campaign, but ruinously expensive when operations are prolonged. In November, 1900, it was decided that the Government should take over from the contractors the whole transport as it stood, and 30,600 oxen were purchased. The unit of organisation of the Ox transport was the Company, and each Company consisted of a variable number of sections, depending on requirements. A section consisted of 10 waggons, each with 16 oxen forming a span. There was a Conductor (civilian) to every section, and a head Conductor to every five sections.

On the Lines of Communication the Headquarters, really Depots, of Transport Companies were located; at these the various sections of transport were held for the efficient working of that portion of the line allotted to it. Spare animals were also kept on charge so that exchanges of weakly animals could be made with convoys and columns. The grazing of the resting animals at these depots and the early removal of debilitated working oxen from columns was an especial duty of the responsible officer at the Headquarters of Transport Companies. The above organisation took some time to establish, and was the outcome of experience as the campaign settled down more and more into that of a Guerilla War. During the large operations such as have been dealt with in 1899-1900 no such systematic arrangements existed, nor were they practicable until the army was in possession of the country.

We have seen at p. 120 that a Transport "Live Stock Recovery Department" was formed on 7th January, 1901. It was charged with the duties of collecting all Government animals strayed or dropped from the line of march, establishing depots for their reception and re-issue to Transport service,

* See, "Revised Instruction for Transport Organization and Administration," South Africa, Feb., 1902, para. 64.

† See p. 51.

* The help and advice given by the Veterinary Department of Cape Colony in this matter, has been acknowledged at p. 47.

and guarding against any cattle being used as slaughter stock which were capable of being utilized by Transport for work. It was impossible to maintain large numbers of debility-animals at the Transport Depots on the Line of Communication, as they ate up all the limited grazing; *Debility Farms* were, therefore, organized. Each of these had a permanent staff calculated on the number of animals present. The veterinary organisation was under Major Sharp, who had a part of the farm told off as a receiving depot, into which all new animals went for 14 days quarantine before being permitted to mix with the other cattle of the farm. These were subsequently branded, classified, and inoculated against pleuro-pneumonia, and later against rinderpest.* On recovery from this they were turned out with the other stock. The magnitude of this task may be realised from the thousands of debilitated oxen to which this system had to be applied. It was not possible to carry out the work without a technical staff, so Major Sharp selected intelligent men who were trained in cattle diseases and inoculation. They were then treated as Inspectors and received a special rate of pay. These men were entirely under Major Sharp's orders, and travelled about from point to point as required.

Farms for Supply purposes were also formed, quite distinct from but possessing the same general principles of organisation as those adopted in the Transport Debility Farm. When the Guerilla War was fully established and extensive clearing operations undertaken, the collection and disposal of loot and dairy stock became an extremely important matter. The loot-stock was drafted either for Transport or Supply, the dairy stock led to the establishment of *Dairy Farms* for the supply of milk to hospitals.† The farms for the above three purposes were located in the Transvaal and Orange Free State only. Twelve farming districts were formed, each under a Chief Superintendent. Each district contained a number of farms, and the total number of these at the close of the war was eighty-six.

The introduction of vast numbers of loot, dairy and mixed stock destroyed the original safeguards created on the debility farms in the way of quarantine; it was no longer possible to carry them out; the numbers were too large to handle, even too large to find grazing for without creating further centres, or, in the case of "supply" cattle, moving them in the direction of the troops where they could be used as food. For the movement of masses of cattle and mixed stock a body of men known as "Cattle Rangers" was organised. They received pay and a bonus for all stock-running successfully carried out for a distance. The men, excepting in a few cases, knew nothing of the work. Rest for the animals, time for grazing and rumination, were either never contemplated or else neglected. The herds and flocks they attempted to drive were too large for management, the sheep were over-driven and suffocated; thousands died as the result of ignorance. The "Cattle Rangers" disappeared as an organisation, and their place was taken by "Stock Farm Guards" organised under an officer.

The rush of animals with every sweeping movement was not the only disturbing factor: each rush brought disease in with it, and when rinderpest broke out it was evident that it could only be a matter of very short time before all the Government farms became infected. Desperate efforts were made to immunise the animals already at these places, but material did not exist in sufficient quantities, and obviously the working-oxen with the various transport companies had first claim. In course of time all working animals were inoculated, but time and again fresh outbreaks occurred in the spans of working oxen due to the introduction among them of refugee or loot stock which had not been previously protected.

We have seen something of the immense numbers of loot cattle and mixed stock which were brought in by columns, yet in the first instance only a proportion of these found their way into the various farms. Many of the animals were dropped by columns and recovered by the enemy. Sheep were especially difficult to bring in, for they could not keep up with the troops, were unable to cross rivers, and the daily marches were far too long for them. Cattle were lost through being retained by columns and in other ways. As a consequence a Collector of the Military Stock Department accompanied each column, who took over and accounted for the captured animals, oxen, cows, sheep and goats. These suffered from every bovine and ovine scourge, pleuro-pneumonia, red-water, gall-sickness, scabies and rinderpest; among the sheep * scabies existed to an extent which can hardly be conceived, for towards the end of the war none of the flocks had been "dipped" for two or more years.

In stock of all kinds the winter cold played havoc with animals already starved and overworked; tens of thousands died from this cause. The working oxen were protected by clothing, a condition they were not used to, and one with which we cannot agree in face of the prevalence of skin disease. What they required was fuel within to maintain their body heat, and this was seldom or never obtainable in sufficient quantity. The ox of South Africa knows no other food than grass. We attempted late in the war to make up deficiency in grazing by the administration of mealie meal† and occasionally oil cake, but it was overlooked that the grain-digesting power of these grass-fed animals

* All oxen inoculated against rinderpest were branded on the near side with a crown brand.

† Agricultural farms were also established for the supply of vegetables and fruit to both the sick and the troops.

* The condition of these animals was such, that a whole carcase, when dressed, frequently weighed no more than seven pounds!

† The mealie meal was fed off feeding cloths or sacks laid on the ground. This meal being the staple ration of natives, rigid precautions had to be taken to prevent pilfering.

was probably most imperfect, and that under any circumstances a ruminant requires bulk if his digestive apparatus is to work effectively. When no grazing was available during the winter months, a ration of 20 lb. hay was allowed, or 10 lb. if mealie meal (3 lb.) was given, but we have seen, at p. 217, the difficulties in obtaining this supply, even when close to the line of rail.

The number of animals which passed through the loot stock farms varied with the operations in progress. During the last six months of the war, when one would have thought that not a living head of stock remained in the country, there were brought in by the columns a monthly average of 3800 oxen, 10,500 slaughter cattle, and 55,000 sheep.

In the debility farms of the Transport Service the animals died at the rate of 25% to 35% a month.

Among the working oxen of the Transport Companies the monthly death rate before the outbreak of Rinderpest varied between 4% and 8%; during the Rinderpest period it rose to 18% a month. The total number of deaths among transport oxen during the last seventeen months of the war was 125,000, or a mean of over 7300 head of cattle a month.

At p. 143, it is recorded that for the first fifteen months of the war 70,000 oxen had died, been destroyed or captured; for the last seventeen months 125,000 similarly disappeared, or a total of 195,000 for the whole period of the war.

The amount of work done by the Veterinary Service in connection with the Transport Department has never been fully realized for the reason that transport animals excite little interest, and so few really know what is being done for them. The brief account we have given shows the gigantic nature of the task, the marked ability of Major Sharp in conducting the technical side of the cattle work, and the necessity in the future of making some better provision for the care and management of oxen on service.

BRANDING.

The indelible marking of all Government animals in the Field is a necessity. In the case of horses the maintenance of army numbers on the feet was obviously impossible; they grew out and could not be replaced. All the horses were directed to be branded on the quarters with a Broad Arrow, and the same order applied to mules and oxen. It has always appeared to us that this practice lent itself to great cruelty, and in the hands of unskilled persons, unused to the application of a red-hot iron to living flesh, it entailed great barbarism and unnecessary suffering (see Fig. 5, Plate iii.). Nor were the brands confined to the Broad Arrow; instructions were issued for the branding of horses on the shoulder with letters indicating their nationality: the object of this was to secure reports on horses at the end of the campaign which should leave no doubt of their country of origin. Later on cattle were branded with a crown on the side to show they had been inoculated against Rinderpest.

Branding frequently led to sloughing of portions of the skin. It was not realized that any letter which involves an irregular circle, such as a B, isolates a portion of skin which will certainly die if the brand has been severely applied. Every brand should be made with the letters or figures broken as in a stencil plate, even the Broad Arrow, which does not isolate skin, should be broken, for the reason that sloughing will occur at the point where the three lines meet. Brands, of course, may be manipulated by the unscrupulous, but this should not prevent a humane type of instrument being employed.

We are strongly of opinion that with cattle, branding on the horns should have sufficed, and that an animal with a horn cut off should have been regarded as Government property. The distressing scene shown in Plate iii., enacted on tens of thousands of animals, would thereby have been prevented.

The marking of horses and mules in the future need not be more painful than the infliction of a tattooed broad arrow on the inside of the upper lip; for cast animals a line can be put through it.

PICKETING.

No method of tying up animals living in the open has yet been devised which is free from objection; the head rope and heel rope are as old as war itself, and both are open to grave objections. Head ropes last but a very short time; it would be interesting to know how many were used up during the campaign, for there were no articles of horse equipment in greater demand. The average head rope is not constructed with any knowledge of the strain and wear to which it is exposed. Only those who have had to deal with a mass of horses, with no means of securing them, can appreciate the helplessness which results from being without head ropes.* If the head rope is retained it should be of hemp and of such a length that getting around the hollow of the pastern is an impossibility.† A head rope should only be sufficiently long to allow the horse to lift his head to the normal position when standing vertically over the peg or ground line. The horse, for instance, in Fig. 6, Plate i., is correctly tied up, and by no means can a heel-gall from the head rope arise. The next animal to him is badly tied up, *i.e.*, has a long head rope, which, when in the act of turning back to his right position, will in all probability get over the hind heel.

The picket line in all corps which use wheels should be an air and not a ground line, for in this

* See p. 72.

† The length of a head rope cannot be left to the discretion of the men, as injury is certain to occur from heel-gall. See Plate i, Fig. 5, for the mechanism of production; this is a fore leg, a trifle compared with a gall of the hind heel.

way the risk of heel-galls is entirely prevented. An excellent method of securing cavalry horses is by means of a fore-foot shackle and peg. In this case the head rope is dispensed with. The peg must be of iron, and an iron peg is a clumsy thing to carry on a horse, and if not driven in flush with the ground is a source of serious damage through the animal lying on it. The nature of the soil affects the peg question; in sand it will not hold, in rock it cannot be driven, in ordinary soil it holds well but is difficult to take up, nevertheless, the fore-foot shackle has many advantages.

The method of picketing adopted must be capable of affording security to horses both under ordinary and exceptional conditions. It must be able to stand the strain of panic. Hardly a year passes that a stampede of military horses does not occur, frequently from the most trifling cause, and it happens on service even when horses are tired and underfed. Nothing should lull a commander into a false sense of security,—for the report of a rifle at night, a thunderstorm, or a piece of paper blowing through the lines may be quite sufficient to leave him with no horses in the course of a few minutes.

The true appliance for securing a horse in the open against kicking, stampede, or getting loose at night has yet to be devised. It must be simple, strong, light, free from buckles, readily removed in the dark, with nothing to get out of order through wet and mud, and must not prevent the animal from lying down. It ought not to be impossible to obtain this, and a prize of a thousand pounds would doubtless secure it. No one with a knowledge of injuries occurring on the picket line would consider such a sum as ill spent. The cost of fractures resulting from kicks in a single year during peace would more than pay for it, while the increased efficiency and the reduction of casualties is beyond money value in war. Few people realize what these casualties represent in point of numbers, and that a horse with his hind heel over the head rope, may in a minute or two inflict, in his panic-stricken state, an injury which will take many weeks to heal.

DISEASES AND INJURIES.

South Africa is a country of animal diseases, and from the first considerable apprehension was felt in this respect. Nor did it belie its reputation; never again, let us hope, will a veterinary service have such opportunities for seeing contagious and other diseases on a scale which baffles imagination. It is simple to speak of twenty to thirty thousand sick horses a month, but the mind is quite unable to grasp the real significance of these numbers. A horse is allowed three feet of width in the ranks. If, on this basis, the 20,000 sick were formed up in line, they would extend for over eleven miles, and this only represented the wear and tear for one month in South Africa.

In this section it is intended to consider the chief diseases contributing to this inefficiency. It is a regrettable fact that no complete return of sickness for the whole period of the war exists; we are dependant upon fragments—valuable as they are—for an insight into the class of affection which occurred.

The records of 39,400 admissions to Field Hospitals show that every 1000 cases were, in round numbers, built up as follows:—

Debility	-	288
Mange	-	235
Wounds	-	190
Lameness	-	178
Various	-	109
		1000

In this table the proportion of debility appears lower than one would have imagined, but mange and debility were so commonly associated that many cases of debility fall into the skin group

An important distinction must be drawn between the class of case admitted to hospital and that occurring in the Field. For instance, Horse sickness, Tulp poisoning and other rapid affections would never see hospital, nor, in theory, would cases of clinical glanders or farcy, though thousands found their way there. All the debility cases would not find their way to hospital, only those which had strength enough to leave the Field and to withstand a long journey by train. Others passed direct to Debility Farms under the care of the Remount Department, and in this way many thousands escaped record. Nothing like the number of sore backs occurring would be sent to hospital, the hopeless cases being destroyed on the spot, and the less severe dealt with locally, and so with lameness, fractures, and other injuries. The cases reaching Field Hospitals were those that had passed through the pores of the filter, and it is for this reason that the percentage of cured is relatively high, the mean being 61% among the above 39,400 cases

On the other hand, we must not lose sight of the fact that had horses and mules been sent to hospital earlier in their trouble better results would have been obtained. In the first part of the campaign they were retained by corps and worked out; matters improved during the latter half of the war owing to orders being issued on the subject (pp. 194, 195), and to the fact that hospital accommodation existed. Defective as this generally was, from circumstances not within Departmental control (pp. 193, 194). There can be no question from a point of utility and humanity that these cases would have been better in hospital than being dragged about the country by corps.

During the year May, 1901, to June, 1902, 11,184 admissions to the veterinary hospital at Middelburg, Transvaal, gave a recovery percentage of 70,* or

* I am indebted to Major R. C. Cochrane, A.V.C., for these figures.

some 10% better than the mean of 1901; this represents a saving in one hospital of over 1800 horses. It is unfortunate that the figures generally for the year ending June, 1902, are not available, but there is good reason for thinking that the results obtained in other hospitals during the last year of the war were equally favourable.

In the table (given at p. 197) of 24,606 cases—only a fraction of those admitted to hospital during 1901—the death rate was 8·7 %, the destructions 26·5 %, or a total mortality of 35.2 %. The 11,184 admissions to the Middelburg hospital gave a death rate of 4·31 %, destructions 21·4 %, or a total mortality of 25·71 %, a saving of nearly 10 % as compared with the mean of 1901.

It is not necessary in this notice that each class of disease should be separately examined, the subject is too vast; the statements must be general, and confined to those diseases which have proved the heaviest source of complete or temporary loss in the campaign. Before taking these up attention must be drawn to a Veterinary Report written by Colonel Matthews, dated 15th July, 1900, when it was believed the war was over. It is published in Parliamentary Paper, Cd. 963, see this History, p. 191. In it he says:—

"There has been notable immunity from contagious and ordinary disease, except glanders . . . . . Isolation and mallein test have enabled its spread to be prevented. The numerous—about 500—outbreaks have been quickly suppressed . . . . . There has been exceptional freedom from indigenous disease, and in the whole effective of horses and mules (210,000) there have been during the past unhealthy season under 200 deaths from 'horse-sickness,' or less than half the deaths that occurred amongst horses [of the civil population] in Pretoria . . . . from this disease in the same period." He adds that the 45,000 mules of the army had "been generally free from disease, and losses by death, except from exhaustion, extremely rare" "Glanders," he states, "appeared in numerous instances, but its spread has been prevented." Finally, the same report deals with oxen, and we are told that the 57,000 "have been generally free from disease." That pleuro-pneumonia had not been allowed to spread, destruction and inoculation being practised. He refers to cases of "red-water" having appeared, and that precautionary measures were under consideration.

Now this report is an authoritative statement regarding the prevalence of disease among the animals of the army up to the end of June, 1900. It is better than one could have hoped. Skin disease is not mentioned; at this time it had barely begun. Glanders was under control, and good fortune had spared us from horse-sickness during the summer campaign. No reference is made to the existence of Biliary Fever. We are told that the casualties chiefly consisted of Exhaustion and Saddle injuries, and readers of this History will have no difficulty in recognising that the statement subsequently presented to Parliament represented matters as we have seen they existed. There are no tables published with this Report, or the losses from exhaustion and saddle injuries would have prove alarming, but dealing with disease we may say that up to June, 1900, nothing in the way of epizootic affections had occurred which could not have been dealt with in a short time, had peace followed the capture of Pretoria. The whole of the serious trouble from disease took place during the two subsequent years of the campaign, the seeds, of course, having been laid during the first nine months of the war.

The pages of this History have largely been devoted to a consideration of the organisation which existed for dealing with the sick. There was no organisation worthy of the name, no hospitals officially existed, the sick had to trust to good fortune; in fact, it would almost appear that no sick were expected in spite of the fact of the notoriously unhealthy nature of the country for horses.

We do not intend here to survey the painful history in this respect caused by official neglect, but it is well to indicate where, in these pages, the development of a system for dealing with sick animals in the Field is recorded.

[The letters after the figures indicate the position on the page where the information will be found. The pages are divided into four roughly equal parts, a, b, c, d; the letters follow the text, thus a and b are in the left column, c and d in the right].

Official scheme for the care of sick animals in war, 113b, 114a, 115b, 117a, 123c.
No hospitals provided, 2d, 10a, 113b, 114a, 117a.
Sick and healthy horses brought together in Remount Depots. 2d, 23a, 41a, 113c, 114a, 115b, 116b, 125c, 202d, 205c.
Obsolete regimental organisation for care of sick, 5b, 79b, 83a, 241b.
Sick sent to Remount Depots and Farms, 20c, 41b, 49b, 52d, 58a, 127b, 137a, 202d.
Sick left on Veldt, 57b, 120b.
Sick sent to Rest Camps, 196c, 205d.
Result of no organization for care of sick in the Field, 34d, 41d, 58b, 72b, 79b, 80a, 204a.
Proportion of sick animals with Troops, 32d, 42b, 52d, 54c, 58b, 64b, 65b, 71a, 71d, 77b, 78b, 79c, 81c, 82a, 83b, 84a, 86d, 97a, 100c, 101c, 103a, 104c, 106a, 143b, 145, 158a, 159c, 162d, 166c, 186c, 223d, 227b and d.
No Veterinary Equipment for Troops or Hospitals, 4a, 13a, 28d.
Insufficient staff of Veterinary Officers, 4c, 10a, 27d, 73b, 74b, 85d, 104a, 119a and d.
No subordinate hospital staff, 2d, 193d, 199c, 223b.
Indian Field Hospitals, 10b, 13c, 19d, 29a, 58b, 114a, 115d.
Mobile Veterinary Hospitals, 57c, 85c, 98c, 158b, 196c, 198d, 199b, 223d.
The combatant control of Veterinary Hospitals, 72d, 80c, 114c, 115d, 191a, 223b.
Hospitals removed from Remount control 116a.
Improvised Field Veterinary Hospitals approved, 72a.
Opening of several Improvised Hospitals, 116a.
Badly organised Veterinary Hospitals, 118b, 119c, 197b.
An organised hospital sanctioned by War Office, 196b, 197b
Hospital construction and organisation, 113a, 120a, 193d, 194b, 197d, 198a, 199a, 223b.
Number of Veterinary Hospitals, 197c, 224b.
Numbers sick in hospital, 186a and b, 197c, 223a, 224b.
Hospital results, 197a, 223a, 275d.
Cost of Hospitals, 224c.
Army Orders relative to sick and injured animals, 120b, 194a, 195b and d.
Numbers sick monthly, 186b, 194a.
Despatch of sick by rail, 117b, 268d.
Advanced Depots for Stores, 20b, 58a and d, 83a.

HORSE-SICKNESS.

It is convenient to take this affection first; it was the one of all others which caused natural apprehension to the authorities from the beginning of the campaign. Precautions against the disease had already been drawn up in November, 1899, at the suggestion of the Civil Veterinary Department in Cape Town, prior to the arrival of Lieut.-Colonel Rayment. These instructions contained the cream of colonial experience of this malady, supplemented by the reliable knowledge of Dr. Hutcheon and his officers. There is no necessity to reproduce these instructions which were precautionary measures, and not always practicable under military conditions. We have seen that fortunately the first horse-sickness season was mild, and did not trouble us seriously, but during the two subsequent years 5700 fatal cases among horses, and 2000 fatal cases among mules, represent a part of the toll paid for operations in deadly areas. It cannot be supposed that anything like the full number of cases was ever recorded: on the other hand, many must have been reported as fatal horse-sickness which succumbed to other trouble. The large majority of the above fatal cases occurred in the sickly season 1900-1901* (the disease lasts from November to May), the succeeding year proving healthier.

We learned nothing about the disease during the war; active operations are not conducive to clinical or pathological studies. Every Colonial has a remedy which, of course, is infallible. The Authorities were pestered by these people to give them an opportunity of treating the cases with their specific. Several of these persons had never seen the disease, but had heard of someone who did so-and-so, and never had any more trouble! The following is an example of the kind: A gentleman in the Cape Peninsula—where the disease is practically never seen—informed the Authorities that a certain Reverend gentleman had been advised by General Joubert that a small piece of assafœtida, weighing about 50 grains, should be tied to the bit and renewed every eight days. General Joubert had followed this practice, it was said, and had never lost an animal, but the quantity must not exceed 50 grains, nor be used oftener or less frequently than once in every eight days.

Another method of treatment was distinctly heroic, and consisted of the administration of six grains of strychnia, which acted as an antidote provided the horse had the disease, but otherwise, as the prescriber acknowledged, killed it.

These may be taken as fair samples of the volume of advice offered by interested and disinterested persons. In practice, we relied on preventing early morning and late evening grazing. The use of nosebags containing disinfectants, of which creosote was largely employed, appeared to be worthless, and rendered the bag unfit for the purpose for which it is intended. The avoidance of low lying ground as bivouacs and camps is obviously not always a practicable condition on service, valuable as it is as a preventive. The administration of arsenic as a prophylactic was highly spoken of by many with experience, and in the case of a patrol into a dangerous belt might be employed, but the wholesale use of arsenic in the Field (see p. 48 of this History) would have led to some deplorable accidents, and further, is not practicable.

* During this year no less than 1873 fatal cases alone occurred in the Natal District.

GLANDERS.

The British Army at Home had been free from glanders for several years before the war, but those who knew something of campaigning were fully aware that this condition of affairs on service could not last long, and that the disease was bound to find its way in through new purchases and other sources. Far less anxiety was felt, however, in connection with this question, as a new agent for diagnosis had recently been discovered which enormously simplified matters, though on the other hand, it had to be remembered that the Officers of the Veterinary Service had had no experience of its employment, owing to the fact that glanders did not exist in the army. Many had never seen a mallein reaction, and, in fact, outside large cities the same remark applied at that time to the practitioner in civil life.

It will be remembered that in order to place the army on a war footing, considerable additions to its strength of animals was necessary. The Reservists, as they may be called to distinguish them from Remounts, came out of large studs in cities, and in spite of the care and veterinary supervision these animals received, the chances of infection from glanders was always present. As it happened this class furnished the first cases of the disease carried by troops to South Africa. The s.s. "Rapidan," whose history we have seen, arrived at Cape Town on 5th December, and reported some cases of glanders among her horses (see p. 13 of this History), and the Reservists in these all came from public stables. We do not know the number of cases of this disease carried to South Africa by Reserve horses, but it was probably small.

The animals required to replace wear and tear among the troops in the field, and those necessary for the transport of the army, furnished the large group of Remounts, and among these cases of glanders were numerous. The number thus introduced into South Africa cannot be exactly stated, but that it was considerable may be judged from the following list which contains the names of only a few remount vessels on which glanders occurred at sea, or among the animals on landing:—

			Horses	Mules	From
1900	s.s.	"Alsatia"	—	14	Gibraltar
,,	,,	"Australia"	—	40	,,
,,	,,	"Cuban"	—	20	New Orleans
,,	,,	"Montenegro"	—	64	,, ,,
,,	,,	"Hortensius"	—	52	,, ,,
,,	,,	"Hyanthes"	—	24	,, ,,
,,	,,	"Montcalm"	—	78	,, ,,
,,	,,	"Royston Grange"	44	—	,, ,,
,,	,,	"Politician"	6	—	,, ,,
,,	,,	"Milwaukie"	14	—	,, ,,
1901	,,	"Monmouth"	16	—	Fiume
,,	,,	"Montreal"	35	—	New Orleans
,,	,,	"Wingfield"	—	3	,, ,,
,,	,,	"Langton Grange"	4	—	?

This list is not carried beyond February, 1901, by which time the outcry regarding the importation of glanders had been so great that increased vigilance at the ports of embarkation was urged. The result of this additional care was soon evident; nevertheless, 35 cases of the disease were received from oversea (exclusive of cases occurring at sea), in one large coast-depot in Cape Colony, between Sept., 1901, and July, 1902, a vast improvement on the previous condition, but still far short of what was necessary. The above facts enable us to understand how it was that horses of the Regular Forces, free from glanders for several years, were infected in the Field as early as April, 1900. (See p. 60).

The third source of infection was that occurring in the country. Glanders was known to exist throughout South Africa prior to the war. Rhodesia, very early in its history, had made up its mind to rid this young country of the pest while still within reasonable limits, and through the initiative of the P.V.O. of the Rhodesian Government, Mr. Sinclair, this was effected before the war. He saw the whole of his work thrown away through subsequent infection by the troops constituting the Rhodesian Field Force (p. 107). Natal also, before the war had, under the organization of Mr. Watkins-Pitchford, secured legal machinery for dealing with the disease; but in this colony it was more deeply and widely spread, and, as this History shows (p. 24), declared itself very early in the campaign, when local troops were raised and horses obtained from all parts of the colony. In Cape Colony there was probably not a single district which could be said to be free from the disease; legislative machinery, owing to Dutch apathy and ignorance, was not only more difficult of adoption, but met with opposition. The struggle of the veterinary as against the farmer element was constant, and would have been even more acute but for the extraordinary personality of the P.V.O., Dr. Hutcheon.

In the Free State and Transvaal the disease, so far as one can judge, was as widely spread as in the Cape. In the Transvaal legislative machinery existed, but the trained staff to employ it did not. In large centres, like Johannesburg, the disease exceeded anything which could be found in other parts of South Africa. The Republican Forces were not free from the disease when they took the Field. Glanders existed in probably all their large camps, even at the early part of the war (see p. 38); later on, when forced to evacuate their positions, they very rightly left these cases behind for annexation by the enemy.

In spite of local sources of infection it is clear that the main channel from which the army was poisoned in the first instance was from its own remount supply. The troops were operating away from towns, and in a sparsely populated country. On the other hand, the infection of the locally raised forces was obviously due to infection pre-existing in the country, for these troops obtained no oversea remounts, or at any rate, none at the time when glanders was first found in their ranks. March and April, 1900, may be looked upon as the beginning of the trouble in the Regular Forces; at that time the Cavalry Division was infected at Bloemfontein, the Cavalry Brigade at Ladysmith, and the Remount Depot at Mooi River, in Natal. Those who knew anything of these matters were aware that from these available sources the disease must surely spread to other branches of the service, but it was hoped that a life in the open, in a dry atmosphere and with plenty of sunlight, would retard its development, and such was undoubtedly the case.

By July, 1900, the P.V.O. of the Army was able to report that though up to that date about 500 outbreaks of the disease had occurred, these had been quickly suppressed.* The number of outbreaks is astonishing, bearing in mind the short interval between March and July, and may be explained by the constant influx of material with both oversea and local remounts.

The next point to consider is by what means the disease spread during the war.

The arrival of ship after ship with cases of the disease was a source of grave anxiety; every Remount Depot was soon infected, either from this source or the serious blunder of admitting into Remount Depots war-worn animals from the front. The latter system, we have seen,† was carried out in the face of Veterinary advice from the earliest days of the war, and sealed the fate of Remount Depots.

The introduction of debility farms should, in theory, have prevented this mixing, but unfortunately debility farms and remount depots were at times side by side, or even combined, and this led to the disasters recorded in 1901 (see p. 202).

There were difficulties attached to these matters which can only be understood by those whose imagination enables them to picture the thousands of horses temporarily unfit from debility and exhaustion, for the care of which no provision had been made other than that of a remount depot. The principle was wrong, and this was pointed out before a shot had been fired. All familiar with horse-management did not doubt that tired and debilitated horses would exist after hard work, but no one imagined the numbers would be on the gigantic scale revealed in March and April, 1900, nor would

* Cd. 963, p. 14.

† See pp. 23a, 84c, 115b, 116a, 125c, 138c, and 202d.

they have been, had the horses been properly fed. The principle of returning war-worn horses to a remount depot to recuperate was radically wrong, and until these places were hopelessly congested no other system was devised. When later the necessary steps were taken to cope with these ever-growing masses of war-worn horses, the remount depots and debility farms could not be regarded in in any other light than a breeding ground for glanders.

The utilization of captured animals before they had undergone veterinary inspection was a prolific source of infection among all animals, for it included not only glanders and mange, but pleuro-pneumonia. Carelessness in this respect lasted throughout the whole campaign. The animals requisitioned in the large towns of the Transvaal were also grave sources of infection. In future campaigns rigid instructions should be issued regarding horses captured or requisitioned from the enemy, and on no account should they be allowed to mix with the animals of the Force until found free from disease.

The spread of glanders in the Field by ordinary contact cannot be overlooked, though it was probably less than one might reasonably suppose, owing to the nature of the climate (see ante) and the use of nosebags. There is good reason to think that the frequent infection among mules was assisted by the canvas feeding troughs common to each span, though, as we shall note later, these contrivances have their important dietetic advantages. Infection by means of the water supply cannot be disregarded where troughs were used in standing camps, but was less likely to be operative among animals in the fighting line.

The diagnosis of ordinary clinical glanders in the horse gave rise to no difficulties, but it was otherwise with the acute form, both in the horse and especially in the mule. The mule, like the ass, frequently suffers from acute glanders, sudden in onset, with swelling of the Schneiderian membrane, confluent ulceration, stertorous respiration, so noisy, indeed, that the existence of such cases can be detected in the dark.* Many were subjected to tracheotomy under the mistaken impression that the disease was local. Such cases may not react to mallein, nor is glandular sub-maxillary enlargement necessary. The ulceration seen in chronic glanders is absent, and the pituitary membrane reveals destruction of such an extensive nature that it is no wonder those who saw it for the first time paused in amazement, and wondered what they had to deal with. The acute form in the horse was not quite so violent in character, but misleading to the inexperienced.

From outside sources, but mainly through the agency of the Remount Department, it became noised abroad that the veterinary service had blundered, and mistaken glanders for a curable disease known to the Dutch as "new sickness." At p. 203 we have seen how gladly the Remount Department accepted the view of the Dutch, and how skilfully they utilized a difference of professional opinion as supporting the existence of some "new disease." It is not intended to convey the impression that all the cases of "new sickness" were acute glanders, but the Dutch farmer is not a pathologist, and anything he had not previously seen in the horse came under the head of "new sickness"; the cases of acute glanders were thus designated. The opinion held by the Remount Service is quoted at length at p. 203 of this History. This Department did not believe us when we told them their depots were full of glanders; they did not believe us when the dangers of their immense debility farms were pointed out, into which streams of war worn and diseased horses were daily poured. It fitted in with their system of farm management to comfort themselves in the belief that if glanders existed "more would be heard of it," and more would have been heard of it had these animals ever been inspected. We need not again travel over this point; the hideous story is related at p. 202, but we cannot dismiss it without a final comment on the evidence given by the Remount witnesses before the C. of E. Rem: and recorded at p. 203. In this we have seen a layman tendering evidence on a highly specialized and difficult subject, criticising the supposed ignorance of the veterinary authorities, and doing his best to induce the Court to believe that in the matter of glanders we had blundered badly. It so happened that before the same Court a veterinary officer was examined; strange to say he was the officer who had condemned as glandered the particular animals referred to by the remount witness, but it is almost unbelievable that he was not asked a question on the subject of glanders, "new sickness," or supposed mistaken diagnosis. The evidence of the layman on veterinary ineptitude stands uncontradicted, and was presented to Parliament!

The number of cases of glanders occurring during the war can never be known. We have seen (p. 276b) that by July, 1900, 500 outbreaks of the disease had been reported, but the P.V.O. does not give the total number of animals attacked, so that the information is robbed of its chief value. Between April and December, 1900, 2000 animals were destroyed for the disease, either clinical or reactors. From January to December, 1901, 12,000 animals were destroyed for glanders, and of these no less than 9000 occurred in the Remount Depots and Debility Farms of Cape Colony (see p. 204), For the first two months of 1902, the losses from glanders amounted to 1300, and beyond that period no evidence is available. According to these figures

* In the *Journal of Comparative Pathology and Therapeutics*, Vol. xv., 1902, p. 31, Lieut. (now Major) Cochrane, A.V.D., published a most interesting record on "Glanders in South Africa." He mentions the fact that animals presenting no sign of the disease, after thorough examination, might have within three days extensive nasal ulceration and snoring respiration.

This officer, working in a hospital during active operations, cultivated the bacillus, and employed it to ascertain the protective power of mallein against glanders infection.

during twenty-three out of the thirty-two months the war lasted, 15,300 cases of glanders occurred, and this by no means represents the amount of disease existing, for, as will be explained presently, mallein testing during 1901, was mainly restricted to hospitals, depots and farms.

The above figures are sufficient to show that on the termination of hostilities the army was riddled with glanders; there was hardly a unit in which the disease was not present, the occult cases were daily developing into the clinical variety, and from these further infection was constantly occurring.

In connection with the above we have hitherto made no mention of mallein. It is now necessary that our attitude towards this clinical test should be made clear, and, above all, the vastly important lessons derived from its employment with an army in the Field.

When operations began, the scheme which naturally suggested itself for the control of glanders was that employed in civil life, *i.e.*, destruction of the affected and inoculation of those in contact. This was followed out so far as military movements permitted for the first eight months of the war, but by August, 1900, it was evident that not only had we failed to make any impression on the disease, but that owing to the vast increase of susceptible material, and the constant importation of fresh cases, the disease was rapidly gaining ground. An examination of our position regarding the use of mallein then became imperative, and the following conclusions were arrived at.

The employment of mallein during active operations is contra-indicated, as it leads to the destruction of animals in the early stages of infection, which are capable of weeks, or even months of work: long before the disease can develop into the open stage the majority of these animals, at the then rate of loss, will be dead from other causes. As occult glanders is not infectious no risk is run by allowing these animals to live, and the State to obtain some small return for their cost. In substitution for the mallein test increased vigilence was directed to be adopted in regard to inspection. An examination of the nasal chambers by means of a mirror* was to be relied upon as the chief source of controlling infection, and no animal was to be destroyed on the basis of the mallein test if in good condition and free from clinical symptoms. This momentous decision, a reversal of the theoretically true policy, was never regretted; inspection took the place of mallein, and the wholesale operations of the latter and destruction of reactors ceased.

The above regulation did not, however, apply to hospitals and remount depots, which were left unfettered in their action, as in these places it was desirable to keep the disease as far as possible under control, but the general principles were nevertheless not lost sight of. It is obvious a hospital could never be kept free from the disease while cases continued to pour into it from without.

We have endeavoured to make our attitude perfectly clear on the question of the employment of mallein during active operations, and to give a precise statement of the policy adopted.

The action of mallein in cases of acute glanders both in the horse and mule, is not so regular as in chronic glanders, for with the acute variety the animal may fail to react,* in single, double, or triple doses. The rule is that they do react, but exceptions, especially in the mule, are numerous. As the mule is more liable to acute glanders than the horse, it was discovered during the early weeks of the war that reactions to mallein in this animal were nothing like so certain as in the horse. In order to overcome this difficulty double doses for mules were employed. This system obtained throughout the war and, in practice, was found satisfactory, though its explanation must be left to the pathological laboratory.

Not only do cases of acute glanders in both animals react to mallein with less certainty than chronic glanders, but the lungs in both animals may be free from discoverable nodules on macroscopic examination. We suppose that in such cases microscopical examination would reveal the trouble, but it is beyond all doubt that acute glanders may be present in both animals with extensive destruction of the pituitary membrane, without any nodules being detected in the lungs by the sense of touch.† This fact we assume to be the explanation of the differences of opinion held by one or two veterinary surgeons regarding acute glanders and so called "new sickness."

Both horse and mule which may have failed to react to mallein may develop clinical symptoms later.‡

A glandered mule frequently, a glandered horse rarely, may show no sign of local reaction to mallein at the proper period, yet a marked reaction may be present at the 48th hour. In one case in a horse, of which we have a photograph, a nine inch painful swelling appeared at the 48th hour, and the existence of the disease was demonstrated at the autopsy.

The increased dose employed for the mule appears to be responsible for a complication frequently observed in this animal, for swellings very misleading in character may be produced in a healthy mule at the seat of inoculation. This very important statement is based on a large number of observations; some made after the war may be quoted, as the actual figures are available. Out of 1000 presumably healthy mules, 460 were selected to proceed to Somaliland; from such a wide choice none but

* The want of adaptability of some veterinary officers when this order was issued was very marked. Mirrors in large numbers could not be issued at once. They forgot their own hand-glass was available, and that any reflecting surface, metal or glass, was better than none.

* Cochrane, *op cit*, notes the same fact.

† Cochrane records the same important point.

‡ Cochrane relates the case of a horse refractory to three mallein testings, in which complete ulceration of the septum existed.

the best were selected. They were then malleined; double doses being employed. Five animals gave what was regarded as a decided reaction, and in 19 others the local manifestation was sufficiently large to necessitate re-inoculation This was done with a triple dose, and of the nineteen, three were selected as being glandered. Out of this batch of 460 mules, eight were, therefore, deemed on the mallein test to be affected with the disease, and were destroyed. In only four were lesions found, though, of course, it is possible there were microscopic nodules accounting for the reaction in the other four, but the chief point at present lies in the undue proportion of animals presenting local swellings, and yet free from disease. For instance, again quoting from carefully recorded observations, a mule may have a local reaction 11 inches by 5 inches at the 18th hour or later; this may or may not be painful—though never acutely so—lymphatic vessels may or may not run over its surface; the swelling may be tense. or baggy and dropsical, and the animal on P.M.E. found free from the disease.

The following sizes of local reaction are taken from among many, but serve to illustrate this extremely important point: 7½ in. by 2½ in., 8 in. by 4 in., 10 in. by 5½ in., 11 in. by 5 in. In all these cases the animals were destroyed and found free from disease on ordinary macroscopical examination. They were destroyed mainly in consequence of the size of the reactions. All the above and similar reactions measured more in one diameter than in the other, they were longer than they were broad; they were frequently dropsical, and jelly-like. If tense and painful, this was probably due to the presence of enlarged lymphatic vessels. In other words, the local manifestation did not present the true reaction of a glanders swelling, which measures much the same in both diameters, and is painful to an acute degree.

This brings us back to the question of dose. Were the double and triple doses in any way responsible for the size of the swellings? We think that they were. It was found experimentally on glandered animals that if a single dose produced a 4 inch reaction, a double dose might give a 5½ inch, and a triple dose one of 7 inches in diameter. These figures are only roughly comparative though taken from actual observation, but are useful as indicating in the mule that the extent of the local reaction in undoubtedly affected animals did appear to bear some proportion to the amount of material injected. That the ratio is variable is undoubted, for we have seen a single dose produce a 4½ inch swelling, and a double dose in the same animal a 9 inch reaction.

It must be remembered in connection with the whole of the malleining done in South Africa, both during and after the war, that the operations were conducted in the open, the animals were exposed to the sun, dust, and sources of local infection at the seat of inoculation; but so were the horses, and with these such irregularities were not common. Aseptic inoculation was impracticable, though attempted, especially after the campaign closed, and sepsis might have accounted for these peculiarities in the mule reactions, though, again, the horses were under the same conditions. This view was ever present in the mind of the attentive observer, and we admit that the large pear-shaped dropsical swellings observed in the mule, especially if associated with local lymphatic irritation, were by ourselves attributed to this cause. Why they should have been so relatively common in the mule we, unfortunately, do not know, but that they led to errors in diagnosis is undoubted.*

At the beginning of the war the employment of mallein was new to the whole veterinary staff; but the rate at which glanders increased, and the large employment of mallein during the earlier months of the war, soon rendered the majority very familiar with its use,† though the mule ever remained a difficulty.

It cannot, therefore, be said that mallein gives as uniformly good results as a diagnostic agent in the mule as with the horse, or with acute as with chronic glanders. There are many pitfalls for the unwary, and infinite judgment is required in dealing with the puzzling percentage of cases which exhibit reactions which are not truly typical.

Lest, however, it should be felt that these remarks are calculated to raise doubts as to mallein being capable of detecting the existence of glanders in the mule, it may be stated that in 109 animals condemned on the strength of the test, the presence of the disease was verified on post mortem examination. ‡ These mules, however, needed larger doses and more frequent re-testing than would a similar number of horses. Where mallein may utterly fail, to give a reaction is in acute glanders, and this applies, as previously mentioned, to both mule and horse.

So little is known of the mule in this country that it is thought these notes on mallein testing may be useful in a future campaign, though, obviously, they leave undecided some important features which we feel assured can only be elucidated by the laboratory expert.

A brief statement has been made at p. 279d, of the number of cases of glanders known to have existed during certain broken periods of the campaign. These only tell us that infection was widely spread, but the percentage of animals affected may be got at with sufficient accuracy through the returns of those malleined. Between April and December, 1900, 24,400 horses and mules were tested with mallein, and the general reaction amounted to 8·6%.

* It would appear to be desirable to determine whether mallein cultivated from glanders of the mule would be as "irritating" to this animal as mallein prepared from the horse.

† Exceptions are indicated at p. 204c.

‡ We were indebted to Lieut. (now Major) England, A.V.D., for the heavy additional labour this research entailed. It was carried out at the Station Veterinary Hospital, Kroonstad, during one of the most active phases of hostility, and lasted three months.

The majority of the tested animals (15,900) were remounts; 6000 belonged to the Rhodesian Field Force (see p. 107c), and the balance of 2500 represented hospitals and units in the Field. The reaction percentage of these groups can be given:—

Rhodesian Field Force	2·45 %
Remounts	5·3
Units in the Field	7·7
Veterinary Hospitals	15·7

During the next year, January to December, 1901, 28,500 horses and mules were tested; the average percentage of infection was 16, or double that of the previous year, and grouping the units we shall learn where the increase in infection lay.

From	Reacted
Ships and Remount Depots	5·2 %
Units in the Field	6·7
Animals in Hospital *	19·0
Remount Debility Farms	55·0

The table tells us that the two chief depositories of the disease were Remount Debility Farms and Veterinary Hospitals. The infection of the latter is legitimate, they are intended for the reception of sick; but Debility Farms were for the purpose of resting and recuperating war-worn but otherwise healthy animals. The above figures for Debility Farms are known to be incomplete, but they give some notion of the degree of infection. During the period under review, every second animal on the Debility Farms of Cape Colony was affected with glanders in either a clinical or an occult form!

The actual percentage of cases of the disease in Remount Depots and on ships remained at the same point that it occupied during the previous year. It ought to have been lower, for there was much more care taken in the inspection of over-sea remounts, and it is probable that it was lower, and that some of the returns of debility horses were mixed up with those of remount animals. The troops in the Field showed a slight reduction in the degree of infection, but this was due to the better practice of sending the sick and exhausted earlier into hospital. As a consequence the hospital rate was higher in 1901 than in 1900.

It is unfortunate that in the above figures of general infection we are unable to differentiate between horses and mules.

The termination of the war found 161,400 horses, and 93,900 mules and donkeys on the strength of the Army in South Africa,† and the first steps to reduce expenses were directed to getting rid of all surplus animals. How they were disposed of will be mentioned in the section on "Demobilization," but we can anticipate the story by saying part went to a department known as the "Repatriation," charged with the duty of restoring and restocking the devastated provinces, part by sale to private individuals, and the balance was retained by the Army of Occupation.

Peace came suddenly, and the stock of mallein in hand was quite insufficient to test more than a small proportion of the animals to be disposed of. It so happened that if famine was to be averted the agricultural operations could not be started too early, nevertheless, the Repatriation Department was aware how deeply the army animals were infected with disease, and they hesitated to spend their funds on glandered animals. * Forty thousand doses of mallein were at once cabled for to England, and in addition, an order for 10,000 doses a month until further notice; but mallein takes time to prepare, and, meanwhile, the Repatriation Department was clamouring for mules and horses, but especially mules. The question of price for these animals created a difficulty between the civil and military departments, which caused a delay favourable to mallein operation, but the stock of 10,000 doses in the country was a mere drop in the ocean, especially with double doses for the mules, and finally large numbers of animals had to be taken over without being tested. These were drafted all over the country and carried glanders with them. Whole teams disappeared, and a bitter cry from the Repatriation Department resulted. Heavy sales to private individuals in the Cape were also effected, the animals being inspected as far as possible, and every care taken to avoid clinically glandered animals being sold, but complaints from purchasers soon poured in. An infinity of trouble and endless correspondence occurred with the various Civil Governments, who naturally viewed with alarm the wholesale distribution of war-worn and possibly diseased horses. Their anxiety was reasonable, for to them fell the work of clearing up the trouble; they pleaded in vain for the mallein test to be applied to all animals sold. The mallein, as we have seen, did not exist; even had it been on hand the skilled staff for applying the test was wholly insufficient for the number of horses to be dealt with in a reasonable time, and so the animals were sold without being tested.

Looking back on the whole transaction it is difficult to know, under the pressure of reducing expenses and the urgency with which the animals were required by the Repatriation Department, what other course could have been pursued. It was bad, but it was the choice of two evils—famine in the Free State and Transvaal or glanders among the agricultural stock. Over 100,000 horses and 31,000 mules were sold without being tested, or rather to no greater extent than some 25,000 doses of mallein placed, at one time or other, at the disposal of the Repatriation Department admitted of. By about September mallein began to arrive in large quantities from home, and animals still await-

* In one area of the war Cochrane found that out of 12,540 admissions to Hospital between March, 1901, and May, 1902, 2·5% of the animals were affected with occult glanders.

† See p. 229a for the discrepancies which exist in the enumeration of the total number of animals on 31st May, 1902. The Remount Department placed it at approximately 142,149 horses, 76,639 mules, 12,864 donkeys.

* See p. 229a.

ing disposal were dealt with, but the bulk of the sales were over, and the damage done.

There still remained for testing the horses and mules of the Army of Occupation. This had been provisionally fixed at 20,000 horses and 25,000 mules, and by October the work was systematically taken in hand. At this time the amount of glanders should have shown signs of shrinkage, for inspection had been constant for months, with the object of eliminating all clinical cases, yet some 3000 mules, tested for the Repatriation in the month of October gave, as the result of the mallein test, 26% of reactors, while 28% of clinical cases were picked out. Whatever doubt may be cast on the accuracy of the figures dealing with reactors there can be none so far as the clinical cases are concerned, which revealed a degree of infection almost beyond belief. The mules had been huddled together for months awaiting disposal, and under these circumstances infection was readily ensured; they belonged to the Repatriation, who refused to take them over until tested. Their care was repudiated by both sides, with the result that barely a half survived.

The amount of disease among the horses and mules of the army awaiting testing was naturally much less than this; they were under proper supervision and inspection, and clinical cases were eliminated as fast as they occurred. When mallein operations took place the following results were obtained:—

3000 horses gave	7%	reactors
5000 mules „	5%	„

These numbers are probably large enough to establish the proportion of latent cases existing in the Army of Occupation before the final clearing up of the disease was begun. It is unfortunate that the figures for the entire operations are not known.

The task now in hand was a gigantic one—20,000 horses and 25,000 mules had to be tested, and the reactors eliminated; body temperatures were not available as the animals were all in the open, and the season summer.

The principle adopted in Cape Colony was as follows:—Each unit was separately taken; it was enjoined that no hurried measures were to be adopted, and two experts in malleining,* in addition to the officers in veterinary charge, were to be employed. For a month previously nothing was to be done but systematic inspection; double the ordinary interval was to be given on the picket line, each horse or mule was to maintain its position on the line, and every animal was to have its own nosebag clearly marked with its number. No inspection of the nasal chambers was accepted that had not been carried out with a mirror, and 150 horses a day was considered the effective limit for mirror inspection. The watering arrangements were rigidly supervised; if from a trough, no suspect was permitted to be watered excepting by means of a bucket which bore its number. If a stream was the source of water supply suspects were watered last. At the end of a month malleining was to be carried out, not more than 100 horses being submitted to the test at one time. The results of this were to be grouped as follows:—healthy, suspicious, gravely suspicious. The two last groups were to be isolated and on no account mixed; the suspicious and gravely suspicious groups were to be at once re-malleined.

Instructions were issued regarding the disinfection of the site of inoculation and of the needles between each operation.

The results were to be interpreted by the local reaction and character of the swelling, 3½ inches in diameter being regarded with suspicion. In all cases of doubt the animal was to be given the benefit, and a fresh inoculation made on the opposite side. Animals were not to be condemned until the 24th hour, and in case delayed reactions appeared the group was not to be dispersed for three days.

By March, 1903, nearly a year after the war, the disease was well in hand, but in spite of the precautions taken the chances of infection were so numerous, due to the widely spread character of the disease, that it was impossible to eliminate all cases at once. Between April, 1903, and March, 1904, 114 horses and 51 mules were attacked, mainly amongst the cavalry regiments and remount depots, but the disease was so well in hand that its obliteration was within sight. In the following year, *i.e.*, March, 1904, to April, 1905, 31 cases occurred, mainly in remount depots, and the disease then died out. It was thus three years from the date of peace before a clean bill of health could be given, not, perhaps, a long time considering the wide-spread nature of the disease and the fact that glanders was only one of four plagues being fought at the same time, for the army was full of mange, epizootic lymphangitis and specific ophthalmia.

The persistence with which the disease clung to remount depots can readily be understood, for in these places stabling existed. What was too good to destroy was dealt with by burning the walls, scorching the wood-work, and replacing the earth floors after previous burning. The wood-work was then given a coat of creosote, but such work as this requires constant skilled supervision to ensure thoroughness, and with the extraordinary pressure of work and a small veterinary establishment it was not possible to detail special officers for this duty.

A few words are necessary regarding the source of mallein supply. During the first half of the war mallein was obtained from the Royal Veterinary College, London, and from Colonial and Foreign sources. The two latter were as a rule unsatisfactory, and certainly contained some irritating substance; so violent were the reactions in the case of the foreign mallein that an investigation was made as to it possibly having been tampered with, but nothing resulted. No officer wished for any-

* Captain (now Major) Wilson, A.V.D. and C.V.S. (now Captain) Jelbart, were the officers selected for this duty.

thing but the London College mallein, and for the remainder of the war this was entirely depended upon.

The amount of mallein sent to South Africa during the war is not uninteresting.

From	Doses
Oct., 1899, to Dec., 1900	101,500
Jan., 1901, to Dec., 1901	33,200
Jan., 1902, to Dec., 1902	135,800
Other sources	10,000
	280,500

One final point may be referred to: it seems incredible, with such wide-spread infection as the figures for 1900-02 represent, that the whole force was not destroyed, including many of the men. For this the climate is responsible, sunlight and dryness sterilized where moisture would have maintained vitality; discharges which would have retained their virulence in Europe were rapidly killed by desiccation, and this, no doubt, was a helpful factor in the campaign which was subsequently undertaken against the disease.

The occasional death of men from glanders, in the Field, might readily escape detection, that is if we may judge by the fact that in a city like London there is evidence to show that it was not infrequently overlooked. Nevertheless, considering the number of men engaged and the enormous extent to which glanders existed, it seems impossible to believe that had the disease occurred amongst them it would have remained indefinitely unidentified The risk of infection one must believe to have been considerable. Sores on the hand, scratches and injuries, blistering of the face from the sun, the absence of cleanliness, are conditions for infection which it would seem impossible to improve upon, yet we believe no case of the disease was reported among the troops nor among the natives of the transport.

MANGE.

The number of cases of mange occurring in the army among horses and mules exceeded that of any other disease, there were tens of thousands of cases. We have seen, at pp. 13 and 19, that we took sarcoptic mange to South Africa with the 6th Dragoons. but this, of course, was not the only nucleus of infection, for we imported it with remount animals and also contracted it in the country from affected horses left behind by the enemy.

Mange, however, gave no real cause for anxiety for the first few months, though it was known not only at Naauwpoort in 1899, but at Modder River in December, and Sterkstroom in the following February, the latter cases being derived from Remounts issued at Queenstown. It was not until June, 1900, that the matter was seriously heard of (see p. 83b), and this is borne out by the report of the P.V.O., written during that month (see p. 276b), in which no mention of the disease is made. By the following September matters were so serious that a circular was issued notifying the prevalence of mange in the army. This instruction directed the frequent inspection of units, the non-transfer of doubtful cases to other regiments, the segregation and treatment of the affected, and the destruction of those obviously useless. The disease had secured a hold which it was evident would not be relaxed during the operations, and later on, it is safe to say, that hardly a single unit was free from the affection; it was rampant in remount depots and debility farms; it affected horses, mules and oxen. It could not be excluded from debility farms, but Remount Depots were infected by taking in horses from the front (see p. 138c), and by the acceptance of cases from oversea.*

In the first instance it was difficult to cause those in authority to take a serious view of matters. This may to an extent be explained by the fact that skin disease among horses in South Africa was not regarded by the inhabitants with apprehension, for colonial horses in that country are liable to an affection attacking the back, loins and withers, which, in its clinical features resembles mange, and yet such cases are spontaneously curable when the winter coat changes. The Burgher, from observation, knew it was not contagious. We have no doubt whatever that these facts explained why the representations of the veterinary service were not taken seriously. On 10th August, 1901, a year after mange was known to be widely spread throughout the Force, the Inspector of Remounts, South Africa, wrote as follows to the War Office†:—

"—— by the way, you must not be alarmed at mange in this benighted land, nearly every horse in Government or civilian hands which is left on the veldt in winter gets mange; the inhabitants take no notice of it, and it goes with a new coat. We put them through a disinfectant bath which kills it in a few times."

We have referred to the above correspondence at p. 203 of this History in connection with mange on Debility Farms, but its importance, as representing the opinion of an officer closely in touch with the Commander-in-Chief on all horse questions, necessitates its repetition in this section. It must have had the effect of allaying anxiety, and of neutralzing what would naturally be considered the alarmist representations of the veterinary service.

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* The following Remount ships brought mange to South Africa:—

	On	From
"Armenian"	1 Sept., 1900	United Kingdom
"Englishman"	21 Dec., 1900	,, ,,
"South Australia"	22 April, 1901	,, ,,
"Mechanician"	21 June, 1901	New Orleans
"Tactician"	23 June, 1901	,, ,, (Mules)
"European"	11 Aug., 1901	,, ,,
"Cornwall"	24 July, 1901	New Zealand
"Morayshire"	26 July, 1901	Australia
"American"	26 Aug. 1901	New Orleans

This list could be extended, but it sufficiently evidences the way in which remount depots were regularly infected from over sea.

† C of. E. Remnts., Appendix F. p. 368.

As a matter of fact, the skin disease affecting our army was true parasitic mange of two varities, the surface parasite and the burrower, and we never got rid of it until the war was over.

The sources of infection during war are many. Not only were cases of the disease necessarily kept in the ranks, but animals suffering from mange, left behind or captured from the enemy, were freely used and placed amongst our own, and at first, clean animals. It is impossible where blankets are used to prevent infection from spreading, as the same blanket may not be used for the same horse on two successive occasions. Saddle-blankets and saddlery were taken from the affected and placed on fresh horses free from the disease, without any disinfection of the equipment being possible. The men carried the parasites from horse to horse and the trucks in which the animals travelled were prolific sources of infection. Given an outbreak of mange on service or on board-ship, we know of no practicable method by which the spread of infection may be prevented. In saying this it is not intended to convey the idea that no efforts should be made. The rapidity of spread will be considerably lessened by adopting such precautions as are possible in war.

The association of skin disease with debility was a very marked feature, not always the result of cause and effect. A well-known Cavalry Commander regarded debility as the cause of the disease, and believed that horses in good condition could not contract the affection when exposed to contagion. He accordingly did not hesitate to place his own horses in a stable he knew had been occupied by affected cases, and in this way purchased a lesson in the contagiousness of the disease which at once rendered him a whole-hearted supporter of the veterinary view.

The difficulties of dealing with an outbreak of mange in time of peace, so as to guard against the spread of infection, are so considerable that we have no hesitation in saying it is by far the most difficult epizootic with which we have to contend. In war not only is it impossible to control effectively, but the essentials for treatment—isolation, clipping and dressing—are impossible in the Field, and only partly capable of realisation in Stationary Hospitals and Standing Camps. Clipping machines are always a difficulty; frequently of defective material to start with, they are further highly tested by dirty coats and unskilled operators. In fact, for hospital purposes nothing should be used but the power machine, of which there should be numbers, depending upon the size of the hospital, with an ample supply of spare parts, especially blades. Chemical science ought to be able to provide a depilatory which would do away with the necessity of clipping. What an effective agent would mean in the saving of time and labour in a large hospital is incalculable.

A place for clipping should be set apart in Field Hospitals and all hair burned.

The application of dressings needs a large staff of subordinates, but it ought not to be beyond the resources of mechanical skill to arrange for the thorough application of dressings on the same principle as hair brushing by machinery. Dressings are worthless unless rubbed in, and the necessary labour for their application to hundreds of cases is never available at the moment it is most urgently required. The history of the hospitals in South Africa largely centres around the difficulty in obtaining labour for working them, and this will always exist if we depend upon the policy of obtaining local labour for such purely technical requirements as are embodied in the duties of a Hospital Dresser.

The futility of attempting the treatment of mange without a preliminary clipping was over and over again demonstrated; it is worse than useless, for the dressing is of no value and prevents the subsequent clipping of the coat.

For the purpose of applying dressings on a large scale without hand labour the erection of baths, on the principle of "sheep dips," was undertaken. Most of the large hospitals in due course possessed their bath, but the process of obtaining them was slow, as engineer labour, as we have already seen, was not available. The bath was of such a depth that the animal had to swim for a certain distance. Horses did not take kindly to them, and unless arranged as shown in Fig. 6, Plate iii, a good deal of rough handling resulted. As a means of rapidly "dipping" a large number of horses it is of undoubted value, and we place ourselves on the side of those who believe the bath to be a useful adjunct to a hospital. There are many experienced veterinary officers who are opposed to their use, especially in winter, when the shock of dropping into cold water was found to react injuriously on the debilitated. Nevertheless, it takes a long time to dress two hundred cases of mange by hand, while that number can be put through a well constructed bath in a few hours. Sarcoptic mange in the equine is unaffected by baths; such cases must be hand-dressed. It is probable that the value of baths is entirely confined to psoroptic scabies, and that better results would have been obtained had its use been limited to this variety of the disease.

A good bath for disinfecting saddlery and clothing can be made in the Field, by digging a large saucer-shaped hole in the ground and placing in it a sail cloth, such as is used to cover forage or other stores. A bath holding some thousands of gallons of fluid may thus be prepared, and this should exist in all Stationary Hospitals for dealing with clothing and line-gear of mange cases.

Our personal experience was that in the treatment of mange, it was impossible to make a rapid impression where body clothing was allowed. It seems hard on the animal to remove the coat in winter and leave it without body clothing in the open, but experience justified the practice. No

horses died from exposure except such debilitated cases as would have died under ordinary conditions on a wet or cold night. It was, in fact, owing to the experience thus obtained that we found how well animals did without clothing in the open, provided they were well fed. Good feeding is essential in the treatment of mange combined with debility, and the improvement in condition of both horses and mules was not appreciably retarded by the complete absence of clothing. The essential point, however, is that it did them no harm to live in the open, clipped and without blankets, and that was the outcome of an experience of some thousands of cases.

As to the local treatment of mange, it may be safely said that there is no known specific. Everything was tried, and a large measure of success was obtained by all methods of treatment thoroughly carried out. It would be unprofitable to enter into the advantages and disadvantages of each agent so used, but we may broadly indicate that the use of "sheep dip" is worthless for sarcoptic mange; that oily dressings cake and clog in the open; that some of the oils oxidize to such an extent as to form a hard painted surface impossible to remove, and beneath which the disease is spreading vigorously. Ordinary oil, such as linseed, besides drying and caking, has the objectionable property of irritating; this is generally due to adulteration with mustard oil, which inflicts the most acute suffering for a short time after application. Lard oil is bland and unirritating, but difficult to obtain in large quantities. Paraffin and soap solution dressings were largely used, and in skilled hands gave excellent results in psoroptic, but not sarcoptic, mange. The effects require watching, and the mixture frequent incorporation during its application to ensure that it remains in an emulsified state, or separation occurs, and the paraffin blisters.

Major Blenkinsop was responsible for the introduction of the paraffin treatment. The proportions employed by him were as follows:—Two parts paraffin oil, one part linseed oil, two parts soap solution. The preparation of the mixture may be noted. Half-a-pound of soft soap was dissolved in a gallon of warm water; the oil and soap solution were then mixed, and lastly, the paraffin added, the whole well stirred to form an emulsion. The dressing was applied with a body-brush, and again every third day. The animal should be wetted as little as possible, only sufficienty to remove the matted dressing: this the soap enables to be easily done. When the skin is thoroughly dry the dressing is reapplied. The length of period under treatment was about fourteen days.

In chronic cases of the disease, Blenkinsop found that a modification of the above was advantageous. The animals having been washed with a solution of creolin or Jeyes' Fluid were, while wet, sprinkled with pure paraffin from a drop bottle (a quill through a cork), and the oil wiped over the surface with a pad of tow.

Baths of chloride of lime gave good results, but left the skin harsh, and caused irritation if not properly diluted. When applied by hand the men's fingers soon suffered unless precautions were adopted. Baths of corrosive sublimate or arsenic were employed, but appear to have failed to give the best results.

For the treatment of sarcoptic mange, and for those preferring the orthodox greasy dressings and sulphur, a bland unirritating vehicle is necessary, and lard oil meets the requirements; there can be no doubt that the use of common oils should be avoided.

In spite of the difficulties of treating mange during active operations the larger and better equipped hospitals showed good results.

During 1901 the Veterinary Hospital at Johannesburg cured 70% of its 5000 mange cases; in Cape Colony Hospitals, 72% returned to duty out of 4000 admitted; of 27,300 cases in Remount Depots and Debility Farms, treated under Major Blenkinsop's directions during the last ten months of the war, 74% were cured. These figures, collected by different observers at widely different areas of hostilities, indicate that under the unfavourable conditions which prevail in war, including the delay in getting some cases until they are frequently past recovery, or complicated by debility, good veterinary management is capable of returning from 70 to 74% of mange cases to duty.

It may give some notion of the ravages of the disease when we state that it took two and a half years after the war was ended to free the Army of Occupation from mange. The delay was not due to want of thoroughness in treatment, but to recurrences of the disease on the same animals, and to re-infection from buildings and soil.

LICE.

Thousands of horses were affected with this parasite; fortunately they do not lead to a condition of inefficiency. Their origin is obscure, and one cannot be surprised at the old notion of "breeding lice," after witnessing a large army of previously clean men infected in a few weeks. Men suffered more than horses from this disgusting pest, and when it is borne in mind that there is no interchange of clothing or blanket in the Field, it is remarkable that infection is so rapid and general.

The origin and spread of this disease has never, we think, been satisfactorily explained. It is not derived from the horses, for not only is the human louse distinctive, but the infantry were infected to an incredible extent. It is astonishing that so little reliable knowledge exists regarding the genesis of this common affection. If men, in time of war, could be kept free from lice, and horses from mange, what untold comfort would result to both!

EPIZOOTIC LYMPHANGITIS.

On 30th November, 1900, Captain (now Colonel) Blenkinsop found at Johannesburg two mules and a horse affected with a disease "showing symptoms of glanders, but I am suspicious of ulcerative lymphangitis, known in Syria and Egypt as *Sauraga*." * He had the animals inoculated with mallein, and they all reacted. This was unfortunate in one respect, as, for the time being, it appeared to settle the question; we now know, of course, that these were cases of mixed infection, and that a mere accident prevented the existence of the disease being then declared. About six months later a report came from a Remount Depot in Cape Colony that some cases of pyæmia, previously cured, had broken out again. It was the recrudescence of these cases which first drew serious attention to the question; the civil veterinary surgeon in charge was emphatic in not regarding the cases as being farcy, owing to the negative mallein reaction. But at that time we had ample evidence to show that glanders and farcy in the mule might not react to mallein, and the cases were accordingly dealt with as if glandered, and destroyed. During the remainder of 1901, cases of "farcy" not corresponding in their clinical features to true farcy, and not reacting to mallein, were met with more frequently, and affected both horse and mule; throughout the early part of 1902 these became still more numerous, but it was not until after the war had ended that it was possible to take the matter in hand for investigation. Dr. Thieler was then able to show that the discharge from these cases always contained the cryptococcus of Rivolta. It was epizootic lymphangitis, the *sauraga* of Egypt, which had been steadily extending for eighteen months.

The disease had previously been unknown in the Transvaal or Free State, but it was known in Cape Colony before the war, where, Dr. Hutcheon † tells us, it was called "Tick Farcy."

It was not until a year after the war ended that matters became extremely serious in South Africa. No less than 455 cases of the disease occurred during 1903-04; and so widely spread had it become that only seven units in the whole of the Army of Occupation were free from the affection. Further, it was increasing; the number of cases at the end of the year was double that at the beginning. While this disease was spreading glanders was decreasing. The campaign against the latter affection was, by the middle of 1904, an assured success, and lymphangitis was at once taken in hand. We had meantime learned much about the disease; it was found that in favourable cases removal with the knife was the only reliable method of cure; the entire lymphatic vessel and its widely separated abscesses being dissected out in one piece. Wounds of extraordinary length were left, but early cases thus radically treated recovered, the percentage of success being between forty and fifty. The others were destroyed. Recurrence was a prominent feature; some six per cent. relapsed and were destroyed.

It was evident that the most important cause of infection was the method of dressing slight stable wounds, adopted by battery and squadron farriers, of going from one case to the other with a bottle of dressing, and using the same piece of tow or dirty sponge. In this way they carried the disease from one animal to another. An order was published directing attention to the sources of infection, and giving the history of the disease. The order went on to say that a determined effort was to be made to get rid of the epizootic by means of disinfection and inspection. Wounds were only to be dressed under skilled supervision, and fresh dressings used for each. Old dressings were to be destroyed; no wound was to be touched by the farrier's fingers. As by this time stables with concrete floors had been built, the regular disinfection of these with a spray pump was ordered, so arranged that the whole of the stables were disinfected weekly. The pillars, bails and flooring of a standing occupied by an affected case were scorched with a plumber's lamp, and the animals on either side of the affected were regarded as suspects and isolated. Everything depended on the loyal co-operation of the Departmental Staff, and that this was received was shown by the fact that the admission rate soon began to fall, so that for 1904 only one-third of the number of cases were admitted for the last half, as compared with the first half of the year. In addition to the above, the discharge from wounds of all kinds in a unit was examined microscopically once a week, in order to make certain they contained no cryptococci. By the following year the disease was obliterated.

The introduction of specific lymphangitis into the United Kingdom, by remounts sent home from South Africa after the War, will be referred to in the section on "Demobilization."

SPECIFIC OPHTHALMIA.

Shortly after the war ended Specific Ophthalmia became a veritable scourge. The disease was seen during the war, about December, 1901, but the number of cases were few. Shortly after the declaration of peace ophthalmia was reported from a Remount Depot in Cape Colony; before the end of the year the disease was found to be widely spread. Specific Ophthalmia appears to have been a new disease in South Africa; neither Dr. Hutcheon nor Dr. Theiler had previously met with it, and we may without hesitation declare it to have been imported with remounts. The conclusion was arrived at that it came with horses from America, in which country specific ophthalmia is common.

The question, however, of origin is not so easily disposed of. 109,739 horses were purchased in the United States between November, 1899, and June,

* Extract from a report to the P.V.O. of the Army.

† Report of Civil Veterinary Department, Cape Colony, for 1904.

1902; they were received as follows, round numbers being employed:—

Nov., 1899, to March,	1900	1,200
April, 1900, „ „	1901	36,000
„ 1901, „ „	1902	62,400
„ 1902, „ June,	1902	10,100

Why should the disease only have declared itself after hostilities, in 1902? During the previous year 62,000 horses had been imported from America as against 37,000 in the two previous periods. Why should not some of the 37,000 have shown signs of the disease? We at once confess our inability to answer the question. It might be urged that after the war the general wastage at once dropped, and that the remaining horses, including the 10,100 imported up to June, 1902, lived, instead of dying as those of 1899 to March, 1901, had done. If it could be shown that the disease was subsequently equally distributed between the survivors of the campaign and the new horses admitted to the country between April and June, 1902, there would be something in favour of the view that we did not meet with the affection until some months after the war concluded, as the previous horses died before the disease had time to develop, but we can hardly think this is the case. It is significant that of the units attacked, the Remount Depots, containing the last purchased horses, practically all from the United States, suffered out of all proportion to the others. In one depot no less than 48% were affected, in another 25%.

During the second year after the war over 14% of the horses of the Army of Occupation were affected with the disease, yielding no fewer than 2000 cases. Never has periodic ophthalmia previously existed on such a gigantic scale!

It is a reasonable supposition that when a disease suddenly breaks out and spreads it is due to a contagium; in the case of this outbreak of specific ophthalmia every known method of attempting to communicate the disease by direct inoculation failed. This pointed to an intermediate host, and the fly fell under suspicion, but the use of eye-fringes failed to prevent its occurrence. Apart from the general history there was direct evidence of its infectivity. A remount depot where the disease was rife was broken up, and its horses distributed to two other depots where the disease had scarcely been known. The result was that ophthalmia became an absolute scourge at these depots. Beyond this point we were unable to go, and the agent of transmission remained undetected.

Few cases of the disease were seen in Colonial animals, but at this time only a few existed in the service. Mules did not suffer to the extent of horses, and the South African mule less than the one from the United States. During the third year after the war the disease among horses declined. From 14% admissions in 1903-04, it fell to 7% in 1904-05; with the mules matters remained at a standstill, or were slightly worse. Advantage was taken during this year to ascertain the proportion of primary and recurrent attacks. These are shown in the following table;—

Of every 100 admissions from the disease—

	Horses		Mules
Primary attacks	50·47	...	75·62
Second „	32·23	...	16·80
Third „	11·00	...	3·36
Fourth „	4·40	...	1·68
Fifth „	1·10	...	1·68
Sixth „	·62	...	·84
Seventh „	·15	...	—

During the fourth year after the war the disease became still further reduced, and eventually passed away. It is greatly to be regretted that no definite source of infection was discovered. It was a sound measure to treat the affection as microbic, and it is possible that the stall disinfection, so thoroughly practised for Epizootic Lymphangitis, was one of the means by which the affection was subsequently abolished. The causes of the trouble, and its ravages after the war among a body of animals previously comparatively free will ever remain a mystery.

TONGUE DISEASE.

This disease was entirely new to the Veterinary Service. It is characterised by the formation of vesicles on the tongue, and sometimes on the lips. The vesicles inside the mouth, instead of running a simple course, ulcerate, converting the tongue into a complex of ragged ulcers with sloughing masses of the tongue tissue and intense fetor. Acute cases died from starvation, as feeding was impossible, and in those examined post mortem the ulceration was found to extend to the back of the tongue and fauces, with deep destructive necrosis of tongue, soft palate, and even the cheeks. Attempts were made to reproduce the disease by inoculation, but failed, yet it can hardly be doubted that it was contagious. Few animals escaped an eruption on the lips resembling variola, though fatal cases occurred in which there was no such eruption.

Nothing was seen of the disease until May, 1901, and at that time it appeared to be widely distributed over Cape Colony and the Free State, causing a relatively high mortality. Veterinary hospitals and remount depots were affected, and also units in the Field. Of its existence in the Transvaal at this time there is no record, but the disease was known there, as it is recorded by Dr. Thieler, who had observed several outbreaks before the war.

During 1902 very little was heard of the disease, and the cases which occurred were milder. It is a subject for regret that more information of a definite character was not obtained regarding this affection, which in some respects resembles vesicular stomatitis, though infinitely more acute than this disease as seen in Europe. The inability to convey it by inoculation and the mortality are also in great contrast to the benign disease. The affection caused widespread inefficiency during the winter of 1901.

BILIARY FEVER.

This disease in South Africa was made known by the work of the late Dr. Hutcheon in 1883, who found it was prevalent in the Cape Peninsula, along the East Coast, and for a hundred miles inland, later on he observed it had spread all over the South African Colonies.

In the Cape Peninsula nearly every imported horse was found to suffer, and, it may be added, dogs also. It was not the first time Biliary Fever had been met with by the Veterinary Department of the Army, for in India imported Australian horses suffer, likewise horses imported into Egypt.

The horse of South Africa does not suffer from Biliary Fever, he has an acquired immunity, though his blood contains the organism, and when inoculated into a susceptible animal it conveys the disease with certainty. The cause of biliary fever is a parasite in the red blood cells, closely allied to that met with in man in malarial fever, and in the ox in "red water." Thieler worked at the disease during the war, and a year or so after its conclusion proved that the source of infection was the red tick found principally in the region of the fundament. The tick is picked up while grazing; abundant observations show that on the high veldt stabled horses are relatively immune, though this was not observed by Hutcheon in the coast districts. During the campaign a vast amount of inefficiency resulted from this disease, for all imported horses were liable to attack. It is more prevalent in the early spring and hot season, the period at which the campaign broke out, and horses so attacked are rapidly rendered useless. It is not known how many of the thousands of sick and debilitated horses were affected with the disease, but a very high percentage. Had our knowledge of the affection been as complete at the beginning of the campaign as it was subsequently, it is difficult to see what preventive measures could have been adopted. To keep animals free from ticks is a council of perfection under service conditions. The mortality from the disease a year after the war was 16%: during the war it was infinitely higher.

OSTEO-POROSIS.

This disease appeared in Argentine horses imported to the Cape in 1898, and was described as such by Lieut. (now Major) A. H. Lane, A.V.D. Nothing more was heard of it until 1904, though isolated cases had occurred from time to time among the civil horses in the Cape Peninsula. In the latter year the cases became so numerous in Cape Town and its suburbs, that a special inquiry was instituted by the Cape Veterinary Department. In the language of Dr. Hutcheon, it had "become the greatest scourge affecting horses in the Peninsula." In the early part of the same year a large number of military mules at Middleburg Cape, a long distance from Cape Town, were found to be affected with lameness following on wet and cold weather. This was attributed at first to rheumatism, but as the number in hospital gradually rose to 250, it became evident that something more serious existed. An inspection of these animals showed the presence of osteo-porosis; the lower jaw was thickened in many cases, and deformity of the face existed. Some animals in attempting to rise would tear away the joint ligaments from their insertions. A few post mortem examinations decided the nature of the affection. Fortunately it was localized. The horses in the same station were generally unaffected, so that the food and water appeared to be above suspicion. Notwithstanding, a change in diet, especially to green food, was found to be productive of marked benefit among these animals, though Dr. Hutcheon was unable to confirm this view among the civil animals under his care at Cape Town. The history of the disease points to importation from the Argentine and the United States; it was known in Africa among imported race-horses before the war. Whether, as Lieut. Lane held, it was purely a dietetic disease dependent on a shortage of lime in the food was not settled. Personally we regarded it as microbic.

PLEURO-PNEUMONIA.

Throughout the campaign pleuro-pneumonia among the transport oxen was always present; 13,700 cases were reported between April, 1900, and February, 1902, and the majority of these either died or were destroyed. These numbers cannot represent the total number of cases occurring, for the disease was widely spread before the war, and probably no column escaped infection. As a means of keeping the disease under control inoculation was practised. It was impossible for this to be carried out by skilled labour; every man who has been with cattle in South Africa considers himself capable of inoculating. These people frequently employed putrid serum and decomposing lung, the latter actually introduced into a slit in the tail and bound in position. The losses from inoculation carried out under these conditions was considerable; even with the greatest care some loss will be experienced, for the local reaction is frequently intense. A source of infection, not only of pleuro-pneumonia, but of other diseases, was animals abandoned by the enemy in order to be picked up by ourselves. It was an artifice justifiable in war, and a trap into which commanders and others frequently fell. No captured animals should be placed among those of the army until inspected and found free from disease.

The general principles of dealing with a threatened outbreak of pleuro-pneumonia in the Field have already been narrated at p. 59. The collection of serum for this work should invariably be carried out by a professional man; no one else appreciates the importance of cleanliness, freedom from blood and fragments of tissue.

CATTLE PLAGUE.

The outbreak of this disease in 1901 has received notice at p. 206; it was necessary to introduce the subject at that point in order to give a clear picture of the difficulties occurring from month to month during the campaign. We have already seen the condition of affairs resulting from the outbreak of Rinderpest, and the losses among the transport cattle from this and other causes down to December, 1901. By this date the control of the disease was well in hand, and the general death rate had fallen to 11%. The following table shows the mortality among oxen from all causes for 1902:—

	Strength	Deaths
January	63,800	9·27%
February	68,700	4·69
March	74,700	4·83
April	75,500	4·42
May	74,300	4·62
June	69,300	6.31

It is not possible to say what proportion of the deaths in the table were due to Rinderpest, but the number would be relatively small after January, as by December most of the animals had been inoculated.

Sufficient for our purpose has been stated, at p. 207, of the difficulties of controlling a disease like Rinderpest in time of war. The great thing was to establish inoculations as early as possible, and the Serum Stations which were opened have already been noticed. The material used for inoculation, pending the lengthy process of serum production, was the injection of rinderpest bile, either in a pure condition, or after being mixed with glycerine.* The point is still unsettled what risk attaches to inoculation with pure bile.

It will be remembered that bile inoculation was the discovery made by Professor Koch during the outbreak of Rinderpest in South Africa, in 1896-97. He collected the bile from the sixth to the eighth day of the disease, and employed 10 c.c. as a dose which gave a temporary immunity of four months or less; such a period is of the greatest value in a campaign, and if the bile inoculation could be kept up every three months protection would be maintained. The question of whether pure bile can produce the disease is even now not settled. Turner and Kolle deny it, but the late Dr. Hutcheon, of Cape Colony, and his veterinary staff generally, were opposed to the use of pure bile, which they regarded as unsafe. Bile can be rendered free from any chance of producing Rinderpest by mixing it with glycerine. Glycerine destroyes the virulence of Rinderpest blood, but not the immunising substances, and glycerinated bile, in 20 to 30 c.c. doses, was used for the control of the disease in Cape Colony, pending the production of serum, while in the Free State pure bile, in 10 to 20 c.c. doses, was largely used. Unfortunately there are no figures available by which the value of these processes might be compared. The late Lieut.-Col. Flintoff spoke enthusiastically of the benefit of pure bile inoculations in dealing with the disease in the Free State. Dr. Turner* denies that if collected at the sixth to eighth day of the disease it ever produces Rinderpest. Kolle found that bile collected at the third or fourth day may produce the disease, and it seems not unlikely that some of the differences of opinion may be due to the period at which the fluid has been collected. For instance,—during the campaign, when bile was urgently required, it must frequently have happened that the animal was destroyed too early in the disease. It appeared to those responsible for dealing with the epizootic in Cape Colony that glycerinated bile gave no risks, and it was accordingly adopted.

The disadvantages of temporary immunity led, very early in rinderpest investigation, to the search for a better and more permanent method. Turner and Kolle devised that now in present use, known as the simultaneous method of serum and virulent blood. The antidote is injected into one shoulder and the poison into the opposite one. The animal passes through a febrile reaction and obtains immunity, the loss from the reaction being under two per cent.

The presence of Dr. Turner at Pretoria during the epizootic was of great value; together with Dr. Theiler, he established a Serum Station, and some thousands of doses of serum were produced, but the outbreak was principally controlled by Koch's bile method, as an army cannot wait three months for serum. The bile method in the Transvaal was divided into two stages: first, the glycerinated bile, which incapacitates an animal for about ten days, followed by a pure bile inoculation, which conveyed a long, or, as some think, an everlasting immunity. The Transvaal experience was that pure fresh bile should not be employed in the first instance, as it tended to intensify the character of the disease in those animals already infected, while its immunising effect was too slowly developed to protect healthy animals left in contact with the sick. Jugular injection of glycerinated bile conveys earlier immunity than a subcutaneous injection; in the case of animals urgently required for transport purposes in an infected area, jugular inoculations were practised with good results.

The work connected with Rinderpest on the various Transport and Supply Farms has already been referred to at p. 273.

SAND COLIC.

The occurrence of sand colic among horses and mules on service will never be capable of entire prevention. The amount of mud and sand taken up with the water and food in a day would be astonishing if it could be brought together. Whether

* Two parts of Bile (preferably a mixture of biles) to one part of Glycerine, well stirred, and left to stand for eight days. In cases of urgency it can be used in 48 hours.

* Now Sir George Turner.

animals graze or are hay fed in the lines, they are compelled to take in a certain amount of adhering sand. Fortunately the majority of horses get rid of it regularly with the fæces, but others store it up, and it then becomes a most fruitful source of trouble and mortality. The prevention of sand accumulations among animals living in the open should be one of the constant cares of the commanders of mounted units, and a great deal may be effected by cleanliness in feeding and watering. If blankets are in use the hay may be placed on them. Animals who deliberately eat sand should be muzzled after feeding, and extra salt given with the rations. Watering from a pond should, where possible, be effected by buckets, for the slime and bottom generally are turned up by the first animals which enter; watering from a running stream with a rocky bottom is free from objection, but all rivers in flood after heavy rain are sure to be charged with a considerable amount of mud in suspension, and for this there is no practical remedy on a large scale.

Despite every effort a considerable amount of sand and mud will be swallowed, but care will afford protection against preventable ingestion.

DEBILITY.

No reference to the diseases met with on a large scale during the war would be complete without mentioning the most common of all others, debility and exhaustion. The causes for these have been sufficiently studied in the body of this history; we have traced the origin to the semi-starvation diet allowed, and subsequently to the employment of hopelessly unfit horses for the hardest work animals are ever called upon to perform. It is unnecessary to labour the point any further. That there was contributory negligence on the part of regimental commanders has been repeatedly shown, that there was neglect as the result of a total ignorance of the animals' requirements has equally been demonstrated, but beneath all this lies the one solid fact that, after the trained horses of the Cavalry had been utterly destroyed by starvation, there was nothing to take their place but raw, untrained, soft, weakly, underfed creatures, themselves already sick. These, we have seen, filled the ranks from the advance from Bloemfontein in May, 1900, onwards. It is not to be supposed that all the remounts during the remaining two years of the war were equally as "soft" as the above; desperate efforts were made to get some of them into "condition" for work, and as we have seen, in skilled hands, success was obtained, but the time allowed was never sufficient for the purpose generally, and, as mentioned at pp. 188-9, nothing but a suspension of hostilities in 1901 could have effected any all-round improvement. Fresh drafts of officers and men for the regular forces, and an entire change in the Yeomanry and Colonial contingents, were another and unavoidable cause of inefficiency, for these had first to learn their work before they could practise it. Finally, the working out of horses to the last possible effort was a proceeding of incalulable harm, and one which was not always under regimental control. No difficulty exists in finding adequate explanation of the fact that tens of thousands of horses were rendered useless after a few days' service; the sole difficulty is in furnishing a reasonable explanation of why a practice so obviously destructive was persisted in in the face of all experience and common sense. Into this question, as we have said elsewhere, we cannot enter, but it would appear that the power and endurance of unfit horses were either not understood or were over-estimated. Lord Kitchener's examination before the Royal Commission threw no light on the matter, for the question does not appear to have been raised, perhaps for the reason that the scope of the Commission was confined to the period between the beginning of the war and the occupation of Pretoria.

The utility of thousands of horses was limited to a few days, in many cases a few hours, but the general rate of wastage for the war was 25% a month, so that every horse with the columns was replaced three times in the year, or four months as the mean duration of effective life, whereas it ought to have been nearly thirteen. The main cause of this wastage was debility, and from this alone thousands of horses every month entered hospitals or debility farms, see p. 186.

It has been mentioned, at p. 137, that when animals are reduced in consequence of hard work and insufficient food their recuperation cannot take place on corn; if the material is not assimilated it lies in the intestinal canal and undergoes little or no digestion, and, in fact, frequently causes irritation. What is required for such cases is grass, the natural diet of horses; but this is only obtainable in South Africa during the rainy season. What remains after that is a desiccated stem and leaves, deprived of their natural juices, and as useful, at the end of winter, as thatching for restoring the debilitated. Green crops of almost any kind, but especially barley produce an astonishing improvement in debilitated horses, and the cultivation of these crops, both at debility farms and hospitals, was established as a routine measure late in the war. It is obvious how difficult it was to obtain the very food on which the recovery of these animals depended. The weakest and most constitutionally delicate succumbed, generally as the result of a cold night or heavy rain-fall. Those with a little more life left in them would be found down in the morning and utterly unable to rise of their own accord. They required to be lifted bodily upon their legs, and the warmth of a generous sun did the rest. How many died on farms through no help being at hand to assist them on to their legs will never be known.

The drafting of horses from one debility class to another is an essential feature in management; it is no use putting the strong and the weak together; all weaklings must be together, all those improving

form a second class, while a first class is represented by those fit for grain feeding, and from which selections are made once or twice a week for transfer to Remounts with a view to subsequent issue. Without some such rough classification farms are not doing their best work; horses get overlooked, and, worst of all, the weak and strong are thrown together. Classification and grouping are the two cardinal points for the Remount Officer to attend to, and while this is taking place the Veterinary Officer should be inspecting for infectious and contagious diseases, and weeding out any which appear to be hopeless and show no sign of improvement. This work cannot be hurried, and it is desirable that the classes should be made as small as possible for convenience of inspection.

A good supply of clean drinking water is essential; if this does not already exist in the paddocks, an officer should be deputed to see the various classes taken to water in mob formation, for no one else will do the work conscientiously. It is astonishing how rapidly horses adjust themselves to their new surroundings when in large numbers. If they have to be taken to water twice a day, they will be found collected awaiting the event; the first day or two may lead to an attempt at a scamper, and consequent falls from sheer muscular weakness, but they soon come into line, and solemnly walk off to water or grazing in a long drawn out procession conducting themselves with perfect propriety. Any attempt to hustle debility cases by trotting to save time should lead to the immediate dismissal of the offender. The animals must walk, be handled quietly, coaxed and encouraged; whips should be unknown. Three or four mounted men, skilled at the work, will conduct some hundreds of horses, one riding at the head, another at the tail, and one on either side. Every man who can ride will not be a stock-rider; we learned much of this work from our over-sea colonial brother, though his methods are frequently too rough and boisterous for horses in a state of debility. With water, grazing, and constant supervision a month will see astonishing improvement even in the worst cases; three months should see the majority of the horses in the ranks.

The man whose perseverance and attention successfully manages a debility farm, and keeps up a regular supply of suitable animals for the Remount Depot cannot be too well rewarded for his work at the end of the campaign. The secret of success lies in the eye of the master, and that must be kept focussed on its objective for as many hours as the sun is above the horizon.

No attempt has been made in this outline to deal in detail with the question of debility farms and their management. In the above sketch almost ideal conditions have been assumed. In practice the reverse will be met with, and the ability of those in charge will be shown by their adaptability and resourcefulness in making the best of existing conditions. The first step is to arrange for water and grazing; then classification, grouping, and regular inspection; after these, attention must be paid to manger construction, and shelters for the worst cases. The results following on this systematic organisation will be astonishing, provided the officer in charge thinks of his horses all day, and dreams of them at night.

Where debility farms are under no organisation, the state of affairs which will result is that described at pp. 137 and 202 of this History.

WOUNDS AND INJURIES.

The wounds and injuries which occur to the mind as being associated with war are those due to firearms. As a matter of fact they represented during the South African War quite a minor and relatively unimportant part of the trouble. Readers of this History must have been impressed by this fact. We are anxious, however, not to press the point too far, for a very different tale would have had to be related had the British Forces in South Africa been engaged by numbers equal to their own, and as numerically well-equipped with weapons of destruction.

In European Wars the proportion of horses hit is generally greater than that of men. During the wars, 1866 to 1870-1, for every 100 Cavalry soldiers killed or wounded in action there were 140 horses, and for every 100 Artillerymen there were 130 horses. In the operations at Mars la Tour, confined to Cavalry against Cavalry, the three German Cavalry Divisions lost in hand-to-hand fighting 14·7% of their men, and 16·3% of horses. The fire losses occasioned by Cavalry charging Infantry may be illustrated by the losses of the French Cuirassiers at the Battle of Wörth, where 30% of the men and 57% of the horses were lost; the German charge against Infantry at Bapaume resulted in 10% of the men and 24% of the horses falling. * It is evident, therefore, that the relatively small proportion of horses hit in South Africa does not represent the normal state of affairs, though it is probable that in the future cover for horses will be far more carefully taken. The explanation of the preponderance of horses hit over that of men is, of course, due to the larger target. It is not only higher, but wider and infinitely deeper than that of a man. When exposed broadside on to a fire, the effect is greatly increased, for not only is the target many times larger, but a bullet passing through the cavity of the chest or abdomen has but little of its velocity removed, and may continue on its way and pass through two or three other horses, depending upon the range at which it was fired.

* "The Loss of Horses in War," Veterinary-Captain F. Smith.—*Journal of the Royal United Service Institution*, Vol. 38, 1894.